

In This Issue—*Scrapping Old Cars*

# MOTOR AGE

Vol. LI  
Number 14

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CHICAGO, APRIL 7, 1927

Thirty-five Cents a Copy  
Three Dollars a Year



*Custombuilt 5-pass.  
Sedan \$1750*

## Hudson Miles Are Master Miles

*With the Super-Six Principle Freed to the Limit*

The smoothness with which the Super-Six glides from standing start to high speed is totally different from the violent lunge with which high-powered cars usually get under way.

Acceleration even from high speed is always available. The flow of power comes in a smooth stream of energy as it does from an electric motor. This is a notable mark of smoothness that is available only to the Super-Six principle, now freed to the limit of its capacity.

And the chassis of both Hudson and Essex have been specially designed to make full use of these new limits of speed, power and safety.



*Coach \$1285*

Ride in either Hudson Super-Six or its brilliant companion, Essex Super-Six. There is nothing like it in the world.



*Brougham \$1575*

*Other Hudson Models*

*7-pass. Sedan \$1850*

Custombuilt Roadster \$1500 Custombuilt 7-Pass. Phaeton \$1600 Standard 5-Pass. Sedan \$1385

All prices f.o.b. Detroit, plus war excise tax

**HUDSON MOTOR CAR COMPANY - DETROIT**

STANDARD EQUIPMENT IN 140 CARS, TRUCKS AND BUSES

TRADE  
MARK

### The "Perfect Circle" Principle

A is the continuous lubricating groove which holds the oil (shown in red) and distributes it over the cylinder walls in just the right amount for perfect lubrication.

B points to the scientifically located slots which drain the surplus oil—and only the surplus—back into the crankcase.

C is the vital film of oil which is left on the cylinder walls.

Pat. March 29, 1910  
May 2, 1922

## Don't Be Satisfied with LESS!

If it doesn't have "a lubricating groove on the face of the ring with slots milled through" it's not a PERFECT CIRCLE Oil-Regulating ring and therefore *cannot* give PERFECT CIRCLE performance and economy.

PERFECT CIRCLES add 10,000 miles to the life of cylinders, pistons and rings, and prevent oil-pumping, or excessive oil-consumption. Only PERFECT CIRCLES can give PERFECT CIRCLE per-

formance, because only PERFECT CIRCLE has the "lubricating groove on the face of the ring with slots milled through." Write today for dealer information.

THE PERFECT CIRCLE COMPANY, HAGERSTOWN, INC. AND

# PERFECT CIRCLE Oil-Regulating Piston Rings

© 1927, P. C. C.



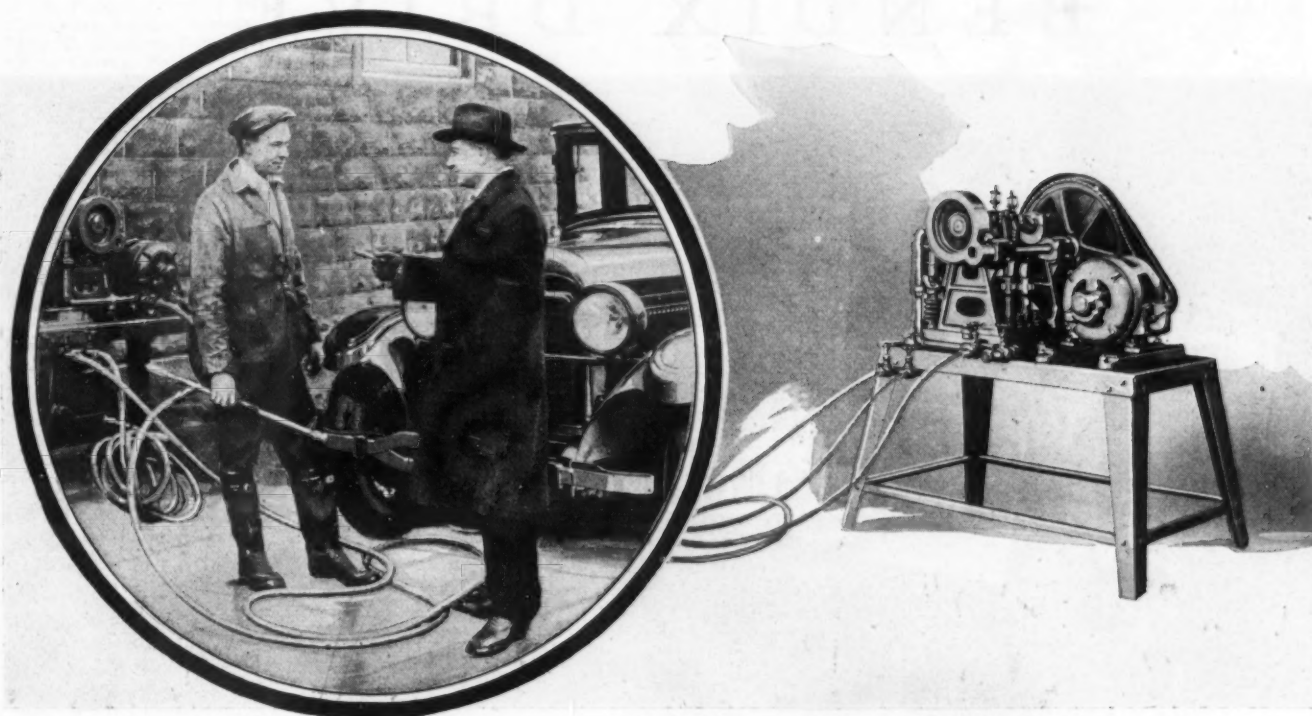
### How It Works

The red shows the path of the oil—up the cylinder wall and into the continuous lubricating groove on the face of the ring, through the oil-draining slots in the ring, and then back into the crankcase through holes drilled in the piston behind the ring.



# HE IS SATISFIED

—a Better wash with a Hardie



EVERY successful business in the world rests squarely upon the satisfaction of the customer. And especially is this true of the automobile washing business.

What does the motorist expect when he turns his car over to you?

A quick job and a thorough job.

Hand washing is neither quick nor thorough. It takes the driving force of the big stream discharged by a Hardie Dependable Car Washer at 300 pounds pressure to really clean the under surfaces. Labor is your big expense. The quicker you do the job the more is your profit and the more is your customer's satisfaction.

The Hardie puts more water or cleaning solution on the car in a given time than any other washer of equal rating. It is built big and strong in every part. Day after day, month after month the Hardie will stand up to the job with no diminution of its power, capacity, or dependability.

Self-lubricating but with no enclosed inaccessible parts, silent chain drive, die-cast, removable bearings, oversize gears, improved plungers—the Hardie is the perfect result of years of specialized pump manufacture by a concern that is known and respected all over the world for the quality of its product. Let us tell you all the facts.

*For Sale by Leading Jobbers Everywhere*

**THE HARDIE MANUFACTURING CO.**

Main Office and Factory, Hudson, Mich.

Western Factory  
PORTLAND, OREGON

Canadian Factory  
PETROLIA, ONTARIO

\* Branches: 222 N. Los Angeles St., Los Angeles, Calif.  
1780 Broadway, New York.  
Export Department: 120 Madison Avenue, Detroit

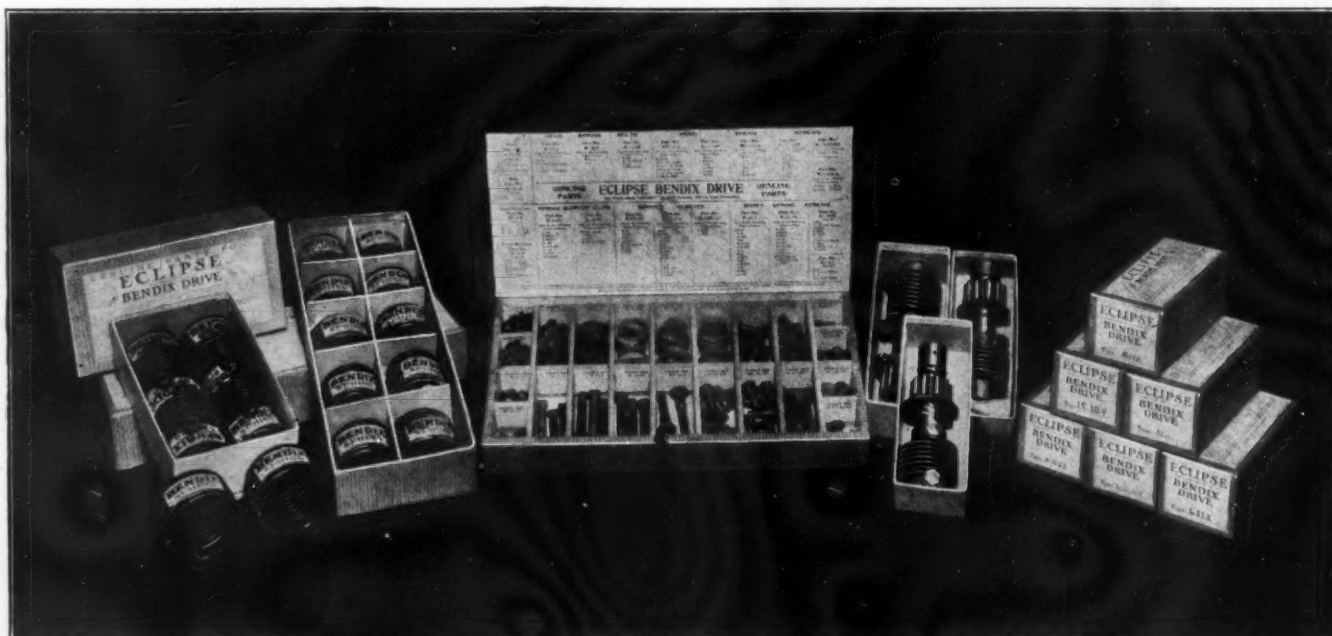
A three-cylinder  
pump in every  
Hardie model

**H** DEPENDABLE  
**HARDIE**  
**CAR WASHER**

Constant pres-  
sure under all  
conditions of use

# ECLIPSE

## BENDIX DRIVE



## The New Service Station Stocks

*Maximum Service + Minimum Investment*



### Service Station Stock No. 1.

With a total of nine complete drives and 235 parts including springs, bolts, screws, washers, service sleeves, etc., Service Station Stock No. 1, pictured above, enables the servicing of fully 75% of the cars in operation today. Service Station Stock No. 2 is even more comprehensive. Fill out and mail coupon below for complete information.

Eclipse Machine Company  
Elmira, New York.  
Department 7.

We are interested in the new Eclipse Bendix Service Station Stocks. Please send complete information, and names of nearest jobbers to

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

WITH the new Eclipse Bendix Service Station Stock, the garage or service station is in a position to give prompt, satisfactory and dependable service on the majority of cars in operation today. Every well-equipped garage should have one.

These new stocks have been selected according to the volume of replacement business on the various items as shown by our experience records, assuring complete quick turnover. Practically every part can be used in the servicing of several different makes of cars, giving maximum usefulness with a minimum of investment.

And most important, every part is a *genuine* part—built to the same high standard of quality, and to the same precision limits as the parts used in the original Eclipse Bendix Drive. Such dependable quality means satisfied customers. Ask your jobber about the new Eclipse Bendix Service Station Stocks.

**ECLIPSE MACHINE COMPANY**  
**ELMIRA, NEW YORK**

Eclipse Machine Co., Hoboken, N. J. • Eclipse Machine Co., Ltd., Walkerville, Ont.

# MOTOR AGE

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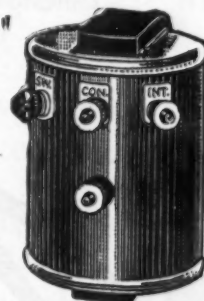
## "Tuning-up" for Spring

Tony's music reminds you that spring is here. That means a rush of "tune-up" jobs. A thorough job lengthens the life of the car.

When her carbon's cleaned out, and the valves are ground, when she's oiled, greased and cleaned, **check up the ignition.** Does it spark right, hot, prompt, and ample—is the coil one to rely on in any emergency? Or is it weak, slow—a doubtful ally in case of need?

**Install a Primax.** Then—watch her spark! Quick as thought—rarin' to go in an instant! Customers will thank you for that kind of service.

Primax fits all cars; quickly and easily installed; and outlives the car. Sold on **unconditional** registered guarantee.



**THORDARSON  
PRIMAX  
IGNITION**

**THORDARSON ELECTRIC MANUFACTURING CO.**  
*Transformer specialists since 1895*  
**WORLD'S OLDEST AND LARGEST EXCLUSIVE TRANSFORMER MAKERS**  
*Chicago, U.S.A.*

## MAIL THIS COUPON NOW!

THORDARSON ELECTRIC MFG. CO.  
500 W. Huron St., Chicago, Ill.

Send complete sales information and net trade prices on Primax Ignition Transformers.

Name.....

Address.....

(3828)



# Mobilized for quick action across the counter!

"Mobilized," says the dictionary, "means 'rendered easy to move or quickly moved.'"

Crescent Tools are easy to move for several reasons:

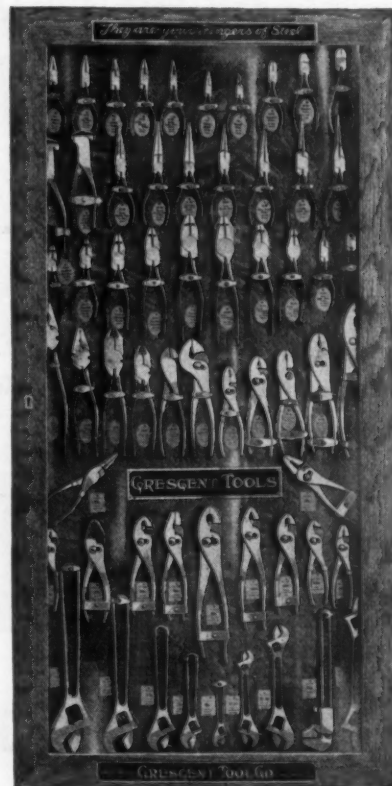
*First*, because they have a reputation for reliability.

*Second*, because they are the types in constant use by everyone—car owners, farmers, mechanics, electricians and amateur "tinkerers."

*Third*, because they are steadily and consistently advertised in national magazines.

And the Crescent Tool Company's WC1 Display adds another speed factor by showing 59 of the fastest selling tools where customers can make their selection at a glance.

The WC1 Display Case will be supplied through your regular jobber at the price of the tools it contains, with no charge for the case itself.



**CRESCENT TOOL COMPANY**  
208 Harrison Street      Jamestown, N. Y.



## CRESCENT and Smith & Hemenway TOOLS

For all types of mechanical  
and electrical work

# Studebaker Commander Takes Command of Country

*and Studebaker Dealers are commanding  
greater profits as a result*

**T**HE Commander—with Big Six Performance heightened—with One Profit prices lowered—is smashing records of speed, records of hill-climbing—and records of sales!

The following telegram was received from the Chester N. Weaver Company, San Francisco, on March 24:

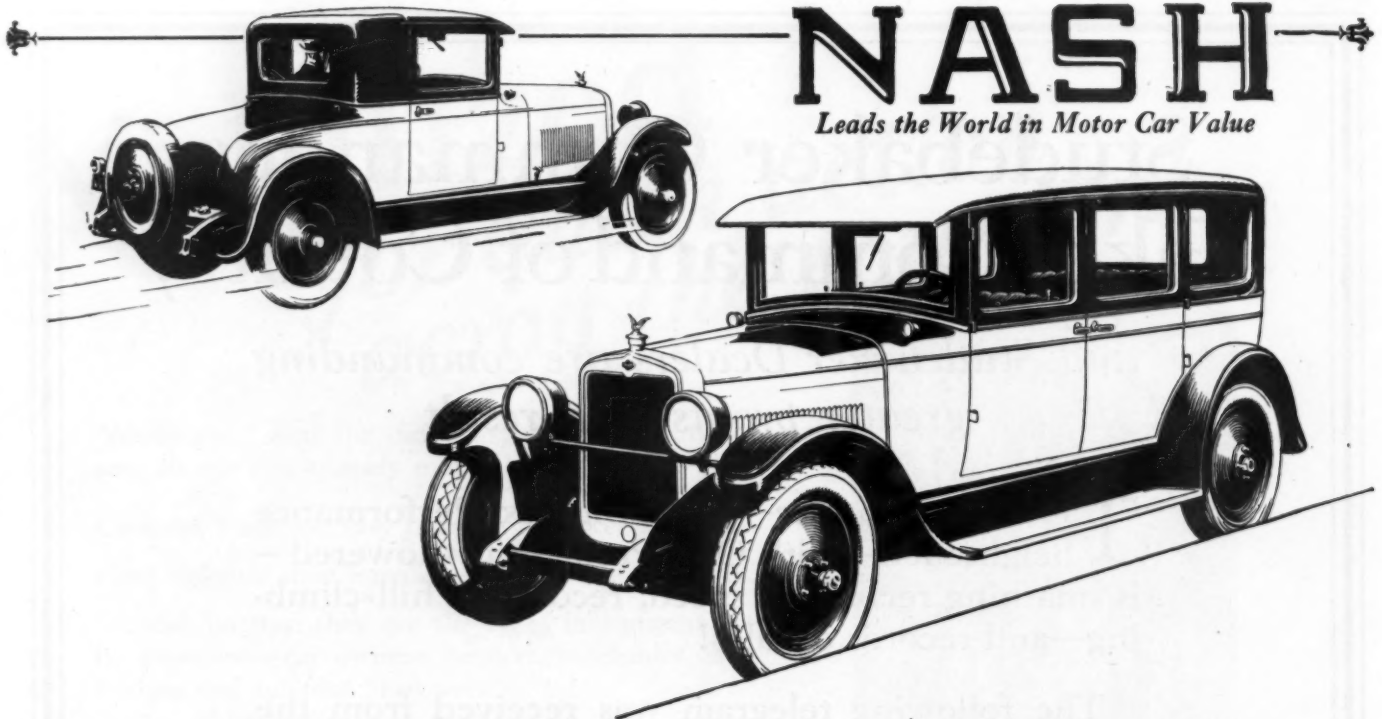
*"We placed order few days ago for thirty Commanders to be shipped quick. Are today placing order with branch for Hundred Commanders to apply against April allotment. Owing to wonderful performance this car and advertising which has been done in last week we find ourselves nearly out of stock. Will you give instructions to have these hundred thirty cars shipped as fast as possible."*

We had already shipped well over one hundred Commanders to Weaver since January 1.

With the Studebaker-Erskine line ranging in price from \$945 to \$2245, Studebaker dealers now dominate three great price fields—the thousand-dollar market, the fifteen-hundred-dollar market and the two-thousand-dollar market.

Write or wire for information on your territory.  
Address Dept. 51, The Studebaker Corporation of  
America, South Bend, Ind.

# S T U D E B A K E R



*Here's Another Great Nash Sales Advantage*

# Add \$50 or \$60 to the down payment on a Four — and get a Nash

Nash dealers everywhere are extending their market down into the vast popular-priced four-cylinder field.

They can offer the obvious and tremendous advantages of a quality Six to those who have heretofore thought in price-terms of a Four.

*"For only \$50 or \$60 more down-payment you can have a Nash instead of a Four"*—that's how it sums up.

Nash 6-cylinder, 7-bearing performance sells for little, *if any*, more than 4-cylinder performance.

Nash Light Six enclosed cars list for as little as \$925 f. o. b. factory—an amazingly low price for a car like this.

For besides the exceptional smoothness of Nash 6-cylinder, 7-bearing performance, the new Light Six models of Nash have every worthwhile feature of modern motoring:

Full force-feed engine lubrication—decidedly

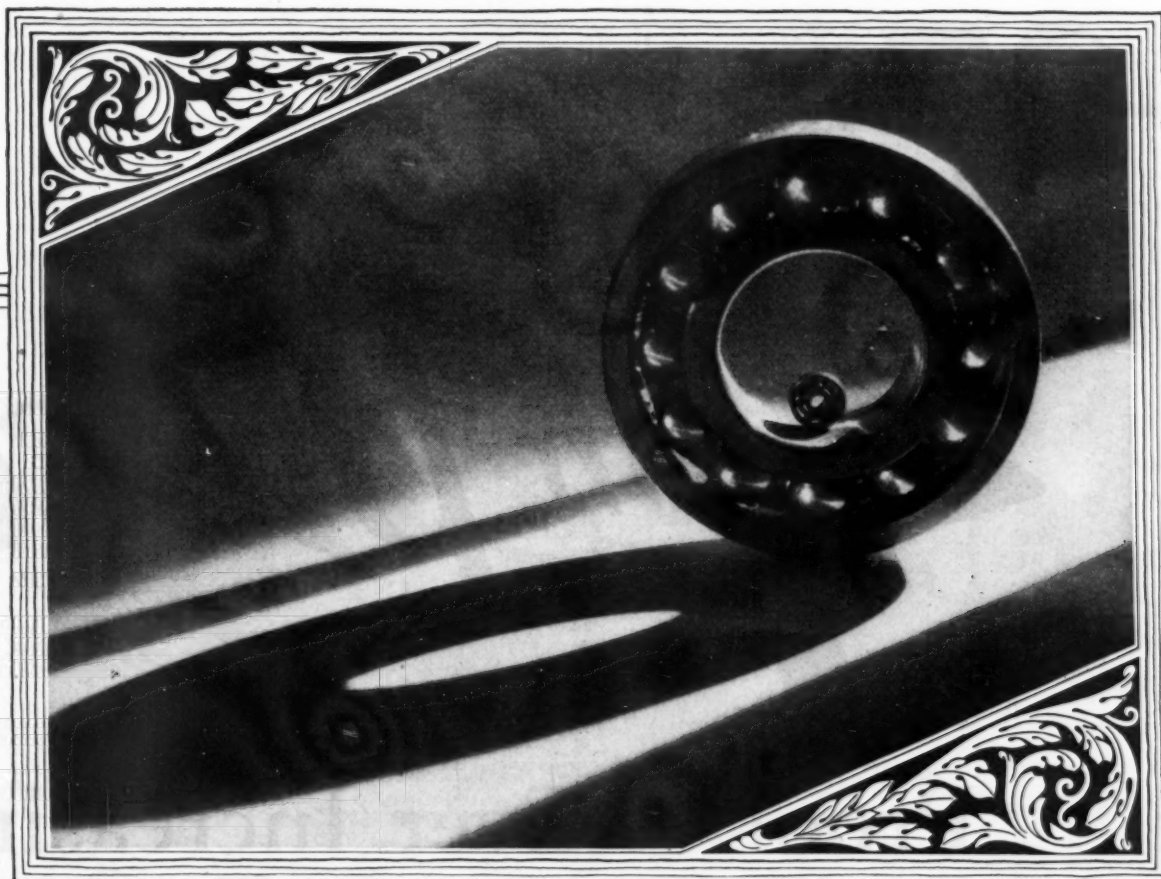
unusual in cars under \$1000; Nash mechanical 4-wheel brakes, with front wheel brakes totally enclosed to protect their efficiency. Double-beam headlights; Automatic windshield cleaner; Rear-view mirror; Gasoline gauge on instrument board—an indispensable convenience. 5 Budd-Michelin steel disc wheels; Alemite high pressure chassis lubrication, instead of old-fashioned grease cups.

Air cleaner and oil filter to seal the engine against dirt; steering gear especially engineered to handle balloon tires without excessive steering-wheel effort.

And, in the closed car bodies, genuine hardwood frames with rounded rear roof like the costliest custom cars of Europe and America.

You can sell this car for about the same price as one of the higher priced Fours. At the most, the prospect only needs to add \$50 or \$60 to his first payment.





### They Pay More for New Departures

**T**O THE credit of American manufacturers it can be said that there are thirty million New Departures used every year in positions where bearings costing considerably less than New Departures might have been used instead.

But modern business is concerned with more than simply disposing of the product. Elimination not only of readjustment expense, but that of replacement is the thought back of this impressive preference for New Departures:

THE NEW DEPARTURE MANUFACTURING COMPANY  
Detroit                      BRISTOL, CONNECTICUT                      Chicago

**New Departure**  
*Quality*  
**Ball Bearings**

-27<sup>th</sup> to  
**4<sup>th</sup> place**

## Proof of Ever Increasing Public Preference

The money-making possibilities of any automobile franchise, are in direct proportion to the responsiveness of the car-buying public. Chrysler's overwhelming sweep from 27th to 4th place in three years' time, is amazing proof of such ever-increasing preference.



# CHRYSLER

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CHICAGO, APRIL 7, 1927



# SERVICE

## As It Should Be

*A Little Sketch Based on the Actual Experience of a Car Owner  
Showing How a Chicago Service Station Has Set a New  
Standard of Automobile Maintenance*

**A**t a honk of the horn the service doors open. The driver stops his car just inside the door. A man in a clean service coat approaches without delay.

"Good morning," is his cheerful greeting. His keen, intelligent face, and his attitude of solicitous interest, probably prompt the visitor to tell what brings him there.

The car needs service—nothing serious, probably carbon cleaned and valves ground and a few little adjustments. It is the first visit to this authorized service shop after a number of others, both authorized and independent, have been tried with little satisfaction.

"Do you know about our service club?" inquires the shop man who we learn is a service supervisor.

Yes, the visitor has heard about it and he thought he would drop in and learn more about it. Quickly and smilingly the service superintendent explains the plan. A printed folder gives the details. Every owner of the particular make of car is eligible. His only obligation is to bring his car in once a month for thorough lubrication, which is done at a flat price which is very fair, and a complete inspection for which there is no charge.

A written report of the inspection is furnished the owner and this report shows him the condition of his engine bearings, valves, pistons and rings, clutch, transmission, steering gear, rear axle, brakes, electrical equipment, and other parts. Work that should be done at an early date to keep the car in best operating condition is indicated.

The visitor likes this plan. He signs a membership card.

Then the service supervisor writes up the order for the little things the owner came in to have attended to. The order also includes the first monthly inspection for which there is no charge.

"I think I ought to have the carbon removed and the valves ground," says the owner.

The service supervisor asks him a few questions about how the car operates.

"Better wait until after we make the inspection and adjustments," the service man tells him.

And the owner goes away with the promise that his car will be ready for him at four o'clock.

When he returns for his car he finds it ready as promised. The service man greets him and shows him the report of the inspection. He tells him that the spark plugs have been cleaned and the points adjusted, and the carburetor adjusted. Looking over the inspection report the owner is surprised to find that there is no recommendation for carbon cleaning and valve grinding.

"Don't need it," says the service man, "but here are a few little things that should be done at your earliest convenience to keep the car in tip-top shape."

Promising to return in a day or two to have this work done, the owner goes on his way and in the first few blocks he finds that the adjustments made have removed the symptoms that he attributed to carbon or leaky valves. And he figures that honest service of this kind that forestalls serious trouble and is really preventive in nature, is a money saver in the long run.

An Utopian dream this? Not at all. Service as it is actually given by Gambill Motor Co., in Chicago.



# Hitting it Up at

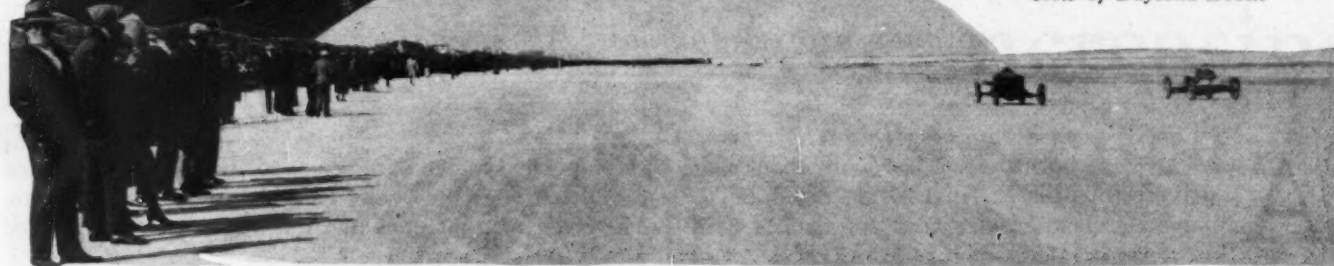
## *Story of Notable Speed Feat by Major Segrave Who Flashed Thousand Horsepower Sunbeam Over Sands of Daytona Beach*



amalgamation of the Sunbeam, Talbot and Darracq factories. Also racing manager for the S. T. D. group. Holder of the world's speed records for one kilometer, one mile and five kilometers. The first and only man ever to attain a speed of 200 miles an hour.

Romance in the Sunbeam records? Listen to the tale: Segrave became stirred by the deeds of Parry-Thomas and Malcolm Campbell, fellow Englishmen, in setting the world's speed record for the mile at above 170 miles an hour. He could not get the matter out of his mind that a supercar could be built that would

*Major H. O. D. Segrave and  
view of Daytona Beach*



By WILLIAM S. STURM

Daytona Beach, Fla., April 1.

**T**HERE will never be another record made on the superfine beach course here that will have half the romance that attaches to the world's speed marks made by Major H. O. D. Segrave, of London, with his specially built thousand horsepower Sunbeam racing car.

That is a very strong statement to make, yet my close association with him as his manager on the particular occasion in question convinces me that time will not make it necessary for me to change it. Romance! Take a cross-section of the major's life: Born in Baltimore, Md., Sept. 22, 1896. Parents moved to England when he was four years old. Educated at Eton and Sandhurst. Entered British army at the outbreak of the world war, serving first in the infantry and then in aviation. Was credited with four enemy planes. Wounded and mentioned in dispatches several times. After the war entered the Sunbeam Motor Car Company, Ltd., as a member of its racing team. Soon became Europe's outstanding performer on the roaring road. Has won scores of long distance road races and shorter events. Holds the record for the fastest lap ever made on a road racing course—140.6 miles per hour for six kilometers of the rough Boulogne road course made last year with a four liter Sunbeam. Has won at least once, sometimes three times, practically every big motor car race in Europe. Now manager of the London district for the Sunbeam Company, an

not only break world's records, but that would travel 200 miles an hour. Louis Coatalen, designer and managing director of the Sunbeam Company, and J. D. Irving, of the engineering department listened to Segrave's importunities. Then they shook their heads. Finally they agreed.

Work on the more than 2,000 drawings necessary for the building of a totally different car from any that had gone before were made. The first casting from these many drawings was delivered on Nov. 17, 1926. But months before these Englishmen had naively announced that they were building a car whose speed would be upward of 200 miles an hour! Some people might call such a statement conceit, some might call it ignorance, some might call it still other things. But it was none of these. It was faith in their own calculations. And their own calculations had proved that a car could be designed for a theoretical speed of 200 miles an hour.

Finally the car was finished in February. On March 2 it was shipped to Daytona Beach. It had never been run 40 miles an hour in England because there was no place to run it. Yet here was Segrave and seven mechanics, together with K. Lee Guinness, president of the company making the K. L. G. spark plug, Lord Rossmore, N. W. H. Freeman, of the Dunlop Tire Company, on board the Berengaria bound for America to prove in practice what they felt sure was right in theory!

# More Than 200 M. P. H.

On March 21 it was tried out on the beach and driven five miles at from 60 to 100 miles an hour. This was the first time Major Segrave had driven the huge car even 60 miles an hour. The trial demonstrated that a higher geared steering would have to be fitted and that the scoops that shot the air to the radiators behind the driver's back would have to be fitted. The brakes, too, failed to hold the four ton mass of steel when a stop was necessary.

On March 24 the car was again towed to the beach and it was announced that Segrave would try his car out again. Organization of the attempt was somewhat lax and Major Segrave did a one way trip of course at 166.51 miles an hour. This was faster than he had ever driven a conventional car, not to consider a huge ungainly monster twenty-three and a half feet long and six feet wide.

The test was satisfactory. For one thing it showed that the present type of braking was not correct for such a huge vehicle. When they were applied the great heat generated heated the shoes so that the aluminum of which they were composed was fused. Segrave also had trouble with his high speed gear seizing, due to the extremely close tolerance given in the transmission.

## Mechanics Make Adjustments

The mechanics started work on the brakes and in fitting bigger air scoops to the rear radiators. On March 29 the car was once more towed to the beach. The best time for making beach records is at extreme low tide and for several days we had been waiting for a suitable beach. For it should be remembered that the beach is capricious. To put it in condition for fast time there should be a hard northeast wind in order to drive the tides hard on the beach and iron it out.

While the beach was in better condition on the 29th than on the previous attempt it was not perfect.

Major Segrave arrived in front of the timer's stand at 9:30 a. m. On the sand dunes along the course 20,000 spectators were gathered. Odis A. Porter, official timer for the Indianapolis race and for airplane and motor boat races in this country had been the

## OFFICIAL SUNBEAM SPEED TRIALS

Daytona Beach, Fla., March 29, 1927

North			
Distance	Net Time	M. P. H.	K. P. H.
1 kilo.....	11.20	199.7259	321.4285
1 mile.....	17.94	200.6688	322.9364
5 kilo.....	56.47	198.0637	318.7533
South			
1 kilo.....	10.84	206.3590	332.1033
1 mile.....	17.39	207.0155	333.1500
5 kilo.....	53.90	207.5076	333.9517
*Mean Average by Averaging Times			
1 kilo.....	11.02	202.9883	326.6787
1 mile.....	17.665	203.7928	327.9637
5 kilo.....	55.185	202.6757	326.1755

\*These averages calculated by first averaging the time and are the official results.

Approved: Val Haresnape, Secretary, Contest Board.

Judges: T. E. Myers, Gar Wood.

Timer: Odis Porter.

timer specified by the racing authorities on the continent. Val Haresnape, secretary of the Contest Board of the A. A. A., was in active charge for his organization. T. E. Myers, of the Indianapolis Motor Speedway and Gar Wood, famous motor boat racer, were the judges.

The writer has never seen such perfect coordination of all divisions of a record event or a race. Chief Calhoun, of the Daytona Beach police, had his organization working like a well oiled watch. There were telephone men at the mile posts over a distance of nine miles. There were timing wires at the starting line, the start of the mile, the start of the kilometer and the finish of all three distances.

Compressed air was applied to the engines and they roared their challenge to the world. Segrave drove his car slowly down to the south end of the course. He announced to the telephone man there that he was ready. The operator telephoned the word to the timer and the timer sent back word for Segrave to go.

All necks were craned to the south. A tiny speck

(Continued on Page 16)



Especially built Sunbeam driven by Major Segrave in great speed feat at Daytona Beach, Fla.



# Eliminate Unmerchant

## MOTOR AGE Platform for Greater Dealer Profits

- ☐ *More net profit per dollar of sales.*
- ☐ *Elimination of used car losses.*
- ☐ *Make the used car a profit producer.*
- ☐ *Eliminate unmerchantable cars from the trade.*
- ☐ *Put the maintenance department on a profitable basis.*
- ☐ *Boost profits by accessory sales.*
- ☐ *Tires will help swell your profits.*
- ☐ *A fair flat rate plan for customer and mechanic.*
- ☐ *Get a profit from parts and supplies.*
- ☐ *Develop sales possibilities of territory to full extent.*
- ☐ *Dealer must not be forced to take more cars than his territory will absorb at a profit.*

**A**N automobile salesman had just about closed the sale of a new car to a man who had never before owned a car. He had made several calls and had given a satisfactory demonstration. The price and terms were agreed upon. The prospect asked the salesman to come back the next evening, indicating he would then be ready to close the deal.

When the salesman called the prospect met him with a smile.

"Come with me," he said to the salesman. "I will show you something. I have talked to my brother and he has told me about the automobile business.

"See, I have a car to trade you. What will you allow me for it?"

As the salesman looked at the ancient and dilapidated motor vehicle that stood in the back yard his heart fell. It was decidedly an unmerchantable automobile. It would run, it was true, but in every respect it was undesirable and beyond all possibility of economical reconditioning.

Taken by surprise this salesman could only answer that his company could not take such a car in trade, and then he learned that the prospect had purchased it for \$50 from a junk dealer, expecting to obtain an allowance of at least \$100 for it on a new car.

### *Sale Was Lost*

The sale was not made and I do not know what this prospect did with his old junk car, but it is not at all unlikely that by doing a little shopping he succeeded in finding a dealer foolish enough to give him \$100 or more for his old relic.

*Industry and Public Would Benefit  
cles That Are Too Old  
Date to Be Safe and*

*By SAM*

Nearly every automobile dealer knows that it is a common occurrence for used-up vehicles which have been sold to junk dealers for \$25 to \$30 to come back in the hands of prospective buyers of new cars seeking allowances of from \$100 to \$300 or more for them.

And the tragedy of it is that in far too many cases the prospect obtains what he wants for the old car. If one dealer will not give it there is usually another who will. Of course the dealer who makes this extravagant allowance is drawing himself closer to business failure, but at the same time he is damaging the business of other dealers.

The crying need today in the automotive industry is more net profit per dollar for the dealer. The dealer needs to retain out of his gross business enough net profit to establish himself as a prosperous and permanent institution rendering a satisfactory service to the automotive public. It is vital to the continued welfare of manufacturers that this condition be brought about.

### *Means of Cutting Prices*

The time has come when one of the biggest problems in the retail trade is what to do with the used cars that are unmerchantable—that are ready for the junk pile but are still being circulated around from one owner to another mostly for the purpose of helping scheming buyers to obtain price cuts on new cars.

Manufacturers, distributors and dealers are interested in this problem and many suggestions have been made as to how to remedy the condition. The industry is pretty well agreed that this problem applies only to the cars that are so much used up and so far out of date that they are no longer merchantable and cannot under any circumstances be made merchantable.

Used cars that are still fundamentally sound and at reasonable cost can be made into desirable merchandise should be reconditioned. Many good dealers have found that by the intelligent reconditioning of such cars they have gone a long way toward solving their used car problems. But there are other used cars that cannot possibly be sold AS IS for much more than junk price, and which, because of age, type, make, or other factors, cannot possibly be made to sell for enough to cover the cost of reconditioning.

It is such automobiles that should be permanently removed from the market and the way to remove them from the market is the matter under discussion. It is easy to say that such cars should be junked. And it is true that many such cars are sold to junk dealers and in turn many of them are fixed up a bit and again



# able Car from the Trade

*by Systematic Destruction of Vehi-  
and Too Much Out of  
Desirable Merchandise*

## SHELTON

find their way into the channels of trade as we have already indicated. Something more needs to be done and the only way to keep such cars out of the market is to break them up.

There are some persons who say that it is not economically sound to break up and destroy any automobile that will still run. They say there is a legitimate market for such cars among persons who cannot afford any better car and that such cars are legitimate consumers of fuel and lubricants, tires, accessories, parts, supplies and repairs. This, however, is a short sighted view of the matter.

### *Reason for Eliminating Junks*

Here are two reasons for eliminating or restricting the sale of such cars:

1. They almost invariably fall into the hands of persons who have no financial responsibility and in many cases no moral responsibility.

*An editorial in a brief letter. The dealer can and must  
"save himself from himself"*

#### PELTON MOTOR COMPANY

WILLIAM A. WEGGE, MANAGER  
254 WEST COLORADO STREET  
PASADENA

March 22, 1927

Motor Age,  
5 S. Wabash Ave.,  
Chicago, Ill.

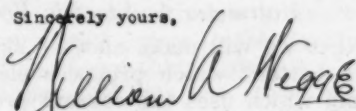
Attention: Sam Shelton, Editor.

Gentlemen:

This is just a note to tell you that I think your articles in Motor Age entitled "GET MORE NET PROFIT PER DOLLAR" are very instructive and should be the means of educating dealers and will help us save ourselves from ourselves.

Keep pecking away, please.

Sincerely yours,



WAW:MST

## NEXT WEEK

*WHAT do dealers think about the systematic scrapping or junking of used cars that are too old and too much out of date to be made into merchantable condition?*

*Many dealers have written to MOTOR AGE on this subject and in next week's issue we will publish some of their comments and suggestions.*

2. They are more often than not so unsound mechanically that they are a menace to public safety on streets and highways.

Taking these two factors together, lack of responsibility which leads to recklessness, and mechanical unsoundness, we have a prolific source of accidents. In fact, some states are seriously considering legislation to keep such cars off the highways.

Going a little further, we find that the owners of such cars are not good customers for supplies and repairs. They are not good pay. Credit is extended to them at great risk. Such cars left in garages for repair frequently are never called for and when the garageman goes to sell them for his charges they do not bring enough to pay the bill.

Economic soundness really lies on the side of the destruction of such cars. The test is the greater good of the whole community and there is little doubt that the public as a whole would be benefited by the intelligent removal of junk cars from traffic.

How to do this is a big question.

It has been suggested that manufacturers permit dealers to add a certain amount to retail price of new cars to build up a fund to compensate the dealer for cars that are broken up and destroyed. Any such plan would have to be carefully controlled to prevent abuses.

Another suggestion is cooperative dealer junk yards in which the parts and materials in old cars would be salvaged to the best advantage. Under this plan serviceable parts would be used for reconditioning other used cars, and all unserviceable parts and other materials would be assorted and sold in bulk.

But dealers generally are agreed that when junk automobiles are destroyed the parts should also be destroyed.

It is hardly logically, as some persons have argued, that every junk car destroyed opens the way for the sale of a new car. Not every person who would have bought a junk car for \$50 or \$75 is able to buy even the cheapest new car, but such person might buy better used cars or save until they were able to buy a new car. In the long run the industry would benefit.

This matter is one of immediate interest to the trade. What should be done about it?

# The Right Way

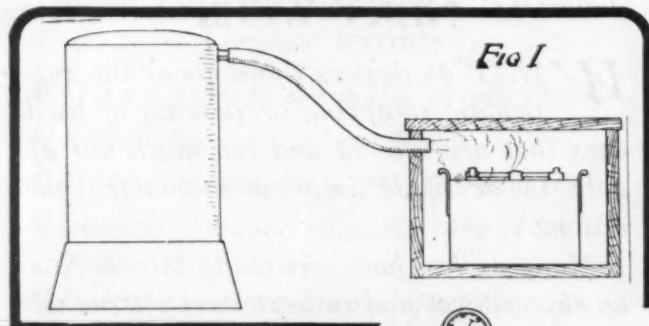
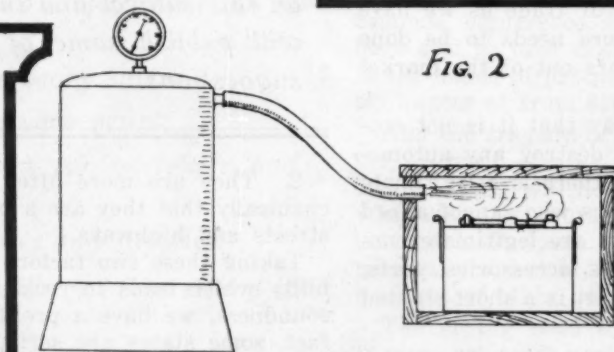


Fig. 1. A boiler produces pressure that sends out a flow of steam

Fig. 2. A gage on top of the boiler will show the pressure but does not indicate how much steam is flowing

Fig. 5. To measure the flow a meter must be in the line that carries that flow



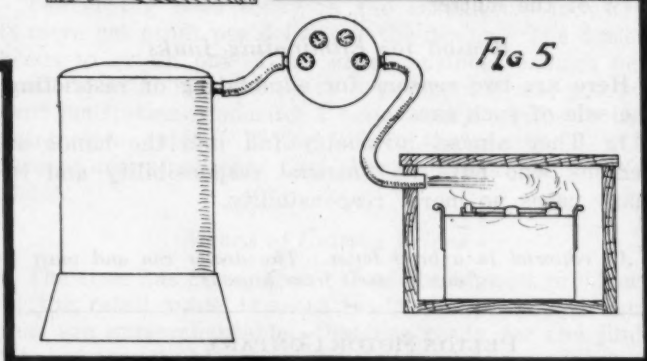
*Bill Fixit Explains the Voltmeter and Ammeter and Shows How Each Should Be Connected*

By A. H. PACKER

suppose it produces pressure that may compare to electrical pressure."

"Fine," said Bill. "But we had to go out to the machine shop to find out something about electricity. My electrical trouble shooters must have been out late last night."

"Me know," said Pitch.



**R**EPAIRING batteries was "duck soup" for Pitch. Time and again customers waiting for cars would stand and stare at the ex-shipbuilder Bill had employed. With uncanny precision he manipulated the flame of the torch, welding plates to a cross strap or connecting a terminal to its post. With his steady hand the hot compound would flow to form a black mirrorlike surface that is the finishing touch of a good repair job. But there was one thing that would "get his goat," and that was the difference between an ammeter and a voltmeter, and just how to use each one in testing on the car.

Bill Fixit knew his battery man's weakness, but had let it pass until one day when an expensive meter nearly went up in smoke on account of it. Only a connection hanging by a single strand had saved the day, for it melted and broke the circuit with the result that a slight bend in the needle was the only harm done. Then and there Bill decided that Pitch needed a lesson on the use of meters, which would probably help the other fellows also in understanding what they were really doing when making an accurate test.

## A Picture Tells the Story

When the gang had gathered around the black board, Bill made a sketch, but it did not look at all like an electrical diagram. Even Pitch knew what it was meant for, though, for Bill had drawn a picture of the steaming outfit that the battery man used to loosen the compound before pulling out the jars.

"Now am I just dumb," said Bill, "or does this sketch (Fig. 1) suggest anything about electrical circuits?"

"It's got a battery in it," said Valvy, "but you have no wires on the battery."

"You're a poor interpreter," said Red.

"There's a boiler," said Steel, the machinist. "I

"Da steam he flow to da box like da juica to da light."

"That's it," said Bill. "We have pressure produced and the pressure sends a flow of steam, while in our electrical circuits we have electrical pressure produced in a battery or generator and the electrical current flows out to the lights or horn or any circuit that needs the current."

"The next question is to figure where we would use meters if we wished to measure either the steam flow or the pressure. The simple boiler and steam box are shown here (Fig. 1). Now suppose I put a pressure gage on top of the boiler (Fig. 2). Is there any way that it can indicate how much steam is flowing out of the hose to the steam box?"

No one could see how a gage on top of the boiler could measure steam flowing out the side, so Bill continued.

## Voltmeter Is Electric Pressure Gage

"Next we will make another sketch (Fig. 3) showing a battery which produces electrical pressure and a lamp which uses the current produced by that pressure. The voltmeter is in reality an electrical pressure gage, so we can connect it right at the battery (Fig. 4) just as the pressure gage was installed on top of the boiler. Then if the pressure gage on the boiler



# To Use Meters

could not tell how much steam was going out through the hose because it had no connection with the hose, neither can the voltmeter tell how much current is going to flow through the wires to the lamp, for while it is connected at the same posts where the wires to the lamp are connected, it does not interfere with them in any way or determine the current they will carry.

"If the voltmeter and the pressure gage are not going to measure the steam flow and the electrical current, the next question is, what do we need to do in order to measure this flow? If a meter is to measure a quantity of anything it must carry that thing. If it is a gas meter, the gas must go **THROUGH** it. If it is a steam meter the steam must go **THROUGH** it and if it is a current meter to be used in an electrical circuit, then the current of electricity must go **THROUGH** it.

"Therefore in our steam circuits we must cut the hose (Fig. 5) and connect in a meter of some sort so as to register on an indicator the amount of steam flowing, while in the electrical circuit the same thing must be done. The circuit or wire must be cut and the ammeter which reads current must be so connected

There is a very slight flow, just enough to make the needle move but it may be only a few thousandths of an ampere and not enough to count, so, from a practical standpoint, we can figure it takes no current or has a very high resistance to flow of current.

"Now suppose we should make the mistake of trying to use a pressure gage connected in the steam line of Fig. 5. There being no leak or hole through the gage, it would be impossible to get steam to flow through it. In similar fashion in Fig. 6 if we made the mistake of connecting a voltmeter in the circuit we would find that the lamp would not light up, as the high resistance inside the voltmeter would let but a few thousandths of an ampere through, which would not be near enough to light the lamp.

"This is the mistake that does no damage, although it does not give the results wanted. The other mistake is the dangerous one, that of using an ammeter in place of a voltmeter, but to understand this we must consider how an ammeter must be built. Suppose in Fig. 5 we had a steam meter that had a very small hole in it through which the steam had to flow. This would hold down the steam flow to the point where the big box with the battery in it would hardly get even warm, let alone hot enough to melt the battery compound.

## Ammeter Must Not Restrict Current

"And in Fig. 6 the same thing would happen if the ammeter could only let a little current flow through. It would be as bad as having a voltmeter used there. That means that our ammeter must have a very low internal resistance and let current flow through easily. The same applies to a meter to measure steam. It should not interfere with the steam flow. In our houses the same thing holds true, for we do not want the gas meter to hold down the flow of gas or the water meter to limit the water flow until we can hardly get a stream that is sufficient to water the grass.

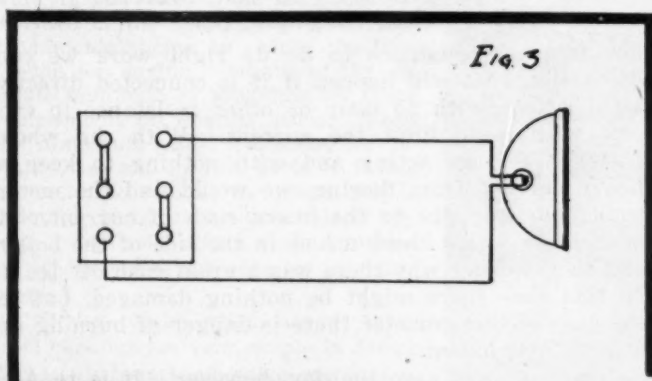


Fig. 3. The battery produces electrical pressure which can send a flow of current to the lamp

Fig. 4. A voltmeter at the battery like a gage on the boiler measures pressure. The ammeter must NEVER be connected this way

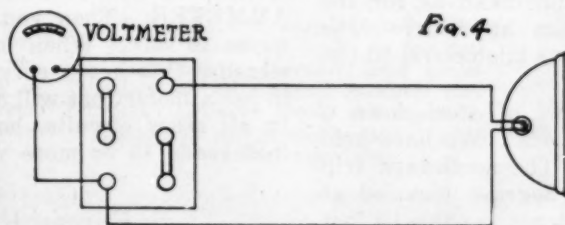


Fig. 4

Fig. 6. The circuit must be cut or opened to connect in an ammeter. This is the wrong way to connect in a voltmeter which does not require the opening of the circuit

that the flow is through the meter to the lamp (Fig. 6).

## Ammeter Is Current Indicator

"Now we will see what is the general difference between voltmeters or pressure indicators and ammeters or current indicators. When you see a pressure gage on top of a boiler you do not expect to see steam shooting out of it and this shows that it does not use up or carry the steam but just lets the steam pressure act on its mechanism so that a needle will read that pressure.

"In similar manner the voltmeter or electrical pressure indicator does not carry any appreciable current.

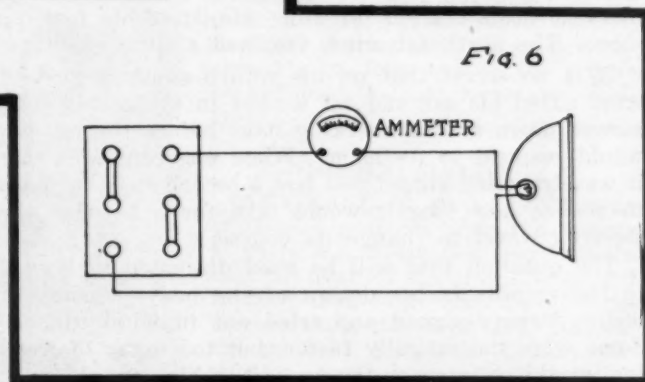


Fig. 6

"Now, knowing that the ammeter must have a very  
(Continued on next page)



# HITTING IT UP AT MORE THAN 200 M.P.H.

(Continued From Page 11)

appeared on the beach. The next instant there was a roar of 24 cylinders working at top speed and a flash of red past the timing stand. Moving picture men intent on snapping the racer got only empty air or at most only a foot or so of film.

Guinness and I hung anxiously at the timing stand. It was my job to furnish the information to the scores of newspapermen present. I looked at the confidential figure Mr. Myers had written on a paper for me. I showed them to Guinness. "Something wrong," I told him. "Surely that isn't right," he answered. For we both had remarked on how slowly the crimson speeder had gone by. And well we might wonder for the figures in my hand were 17.40 seconds for the mile. We knew instantly that it meant over 200 miles an hour. "Here's the time for the kilometer," Myers said. "That can't be true, can it?" The remark again came from Guinness. The timer clocked the distance at 11.20 seconds, practically 200 miles an hour.

Another suspense.

"The five kilos in 56.47 seconds!" Three miles in 56 seconds. Can one wonder that though we had been hoping for it was hard for us to believe?

## *A Flash As He Passes*

We were jerked out of our wonderment by the word that the telephone operator on the northernmost end of the course had announced that the Major had passed his station on the return journey. Then the other announcements came on. Again the tiny bug appeared far to the northward in our field of vision. The next instant it had passed us and grown small in the distance.

A few minutes later Odis Porter and Mr. Myers again passed the time to us. A kilometer in 10.84 seconds, 206.359 miles an hour. The mile in 17.39, 207.0155 miles an hour. The five kilometers in 53.90 seconds, 207.5076 miles an hour.

It was a matter of only a few minutes to get the unofficial average and to shoot it to a waiting world.

As soon as we could get back to the hotel the averages were figured officially and announced as for the kilo 11.02 seconds, 202.9883 miles an hour. Mile 17.665, 203.7928 miles an hour. Five kilometers, 55.185 seconds, 202.6757 miles an hour.

Think of it. Hurling four tons of steel down a beach almost as fast as sound travels! We have held several postmortems on the run. The northward trip would have been faster had not Segrave traveled at such a high rate of speed he could not see the 12 foot marking posts erected for him. He lifted his foot too soon. The northeast wind, too, had a little effect.

It is no secret that on his return south a gust of wind lifted his car and set it over in a big skid. He mowed down several marking flags before the big car would respond to its helm. When one considers that it was traveling almost 300 feet a second it is not hard to realize how long it would take for a turn of the steering wheel to change its course.

The question that will be most discussed in regard to the records is the design of the body. Scores of bodies were designed and tried out in wind tunnels. Some were theoretically faster, but too many of them just would not stay on the ground at high speed.

The curved nose, the absolutely straight lines of the body on the sides, the drooping tail, with the underside

sloping with a decided upward sweep, were found most satisfactory. Major Segrave is of the opinion that no car with its wheels exposed to the windstream could make the speed. The car's body enveloped the entire chassis. Originally it was intended to put covering plates on both the rear wheels and the front wheels. Then the idea was dropped as to the front wheels and on the record run the rear wheels were uncovered in order to keep the tires cool. They still were within the body line, however.

Knowing as much of the attempt as I do, I believe that the car could make a record perhaps three or four miles an hour faster than it did. Its top speed on the run probably was 211. Had Segrave gone faster on the northward trip he would have raised his average considerably.

The car that beats this record, in the opinion of Major Segrave, must have a body designed as was the 200 mile Sunbeam, straight side lines and a curved nose that will throw the windstream over the car instead of a design that will split the wind and pack it up around the sides of the body.

Major Segrave came to America under the auspices of the Daytona Beach Chamber of Commerce.

## The Right Way to Use Meters

(Continued from preceding page)

low internal resistance to do its right work we can see easily what will happen if it is connected directly to a battery with no lamp or other resistance in circuit with it to limit the current. With the whole battery pressure acting and with nothing to keep a heavy current from flowing, we would find the meter would burn up due to the heavy rush of current. It is as if we would knock a hole in the side of the boiler and then wonder why there was a great rush of steam. In that case there might be nothing damaged, but in the case of the ammeter there is danger of burning up a good instrument.

"One rule will save the day, however. It is to ALWAYS BREAK A CIRCUIT TO CONNECT IN AN AMMETER. Then you are reasonably sure that the meter is safe. When breaking the starter circuit to measure this heavy current it is, of course, necessary to use a meter that will carry several hundred amperes. In all other circuits, however, the ordinary ammeter that reads 15 or more will do."

## U. S. Bureau Reports on Finding in Extensive Brake Tests

Exhaustive tests of brakes on a passenger car, which followed earlier laboratory experiments, by the U. S. Bureau of Standards, has brought from the bureau a statement that sudden changes are liable to occur in the retarding power of the brakes and, although such changes usually are only temporary, they are likely to prove disastrous. The bureau states that, with asbestos textile linings of representative types, increasing temperature lowers the co-efficient of friction, largely if not entirely through the influence of the temperature rise on the saturant, and the application of water or oil may have a similar effect. All these effects are more or less temporary, the bureau states, the lining recuperating with cooling, or the disposal of water and oil by application of the brakes.

# A. C. F. Buses Now in Three Types

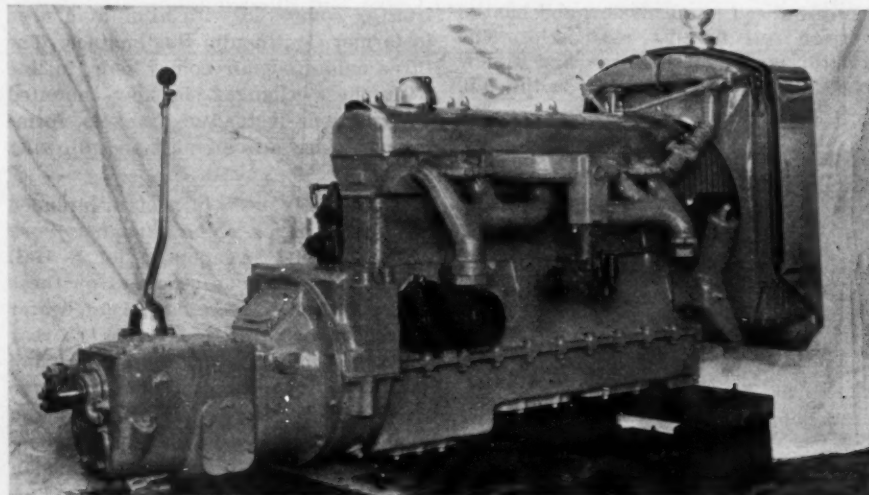
**R**OUNDING out its line with the addition of 198 in. wheelbase models, American Car & Foundry Motors Company of New York and Detroit is now in production on three different types of bus chassis. On the 198 in. chassis, which is of the mechanical drive type, a 16 to 20 passenger parlor car, and a 23 passenger street car type of body are offered. The two other chassis are of 250 in. wheelbase, one being a mechanical drive type, offered in parlor car and street car types, the other a gas-electric, being available with street car and double deck city service type bodies.

All three chassis are powered with Hall Scott six cylinder engines, the larger two being equipped with a  $4\frac{1}{4}$  by  $5\frac{1}{2}$  in. power plant, while the 198 in. wheelbase chassis is powered with a smaller edition of this engine, bore and stroke being  $3\frac{1}{4}$  by 5 in.

The larger six cylinder Hall Scott engine, with its piston displacement of 468 cu. in. develops about 90 h.p. at 1800 r.p.m. While the engine has been designed for high power output at low speeds, facilitation of maintenance work is also one of the main characteristics of the design, the underlying fundamental being to reduce the time needed for engine overhaul to the absolute minimum by providing for quick replacement of wearing parts. While the aluminum alloy crankcase, for instance, is cast in two parts it is not necessary to remove the lower half in order to change connecting rods or pistons, hand hold plates being provided at the bottom of the case for this purpose.

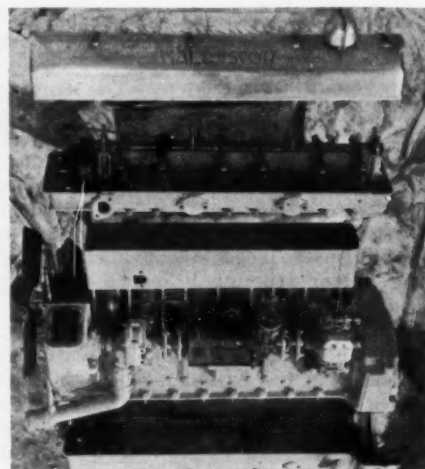
Cylinder blocks which are of semi-steel castings are very simple in design due to the overhead valve mechanism and camshaft. With the completely ma-

*The location of the gearshift lever, offset from the gear box and the mountings of the radiator, which is attached to the power plant proper are features of the mechanical drive chassis*



*Low floor and step height, due to the double drop frame construction feature this 198 in. parlor car as well as other A.C.F. buses*

chined combustion chamber included in the head, the only machining necessary on the blocks is that of grinding the bores and surfacing top and bottom of the block. This method of construc-



*The Hall Scott engines used in all A.C.F. buses are built to facilitate maintenance. Cylinder head assemblies can be replaced in thirty minutes. Cylinder blocks are unusually simple in design and require a minimum of machining*

tion enables American Car & Foundry to offer replacement blocks with new pistons, pins and rings for \$105, practically eliminating the necessity of re-grinding worn cylinder blocks and fitting of oversize pistons, an important feature in providing rapid serviceability of the engines. American Car & Foundry in this connection is conducting a campaign among prospective customers to establish systems of daily inspection and carrying of spare parts to give more reliable maintenance. If the customers stock the repair parts suggested by A. C. F., a discount of 25 per cent on such parts is allowed, whereas otherwise list price has to be paid.

On the whole there have been no radical changes in design in the Hall Scott engine since acquisition of this company by American Car & Foundry. Pistons are of aluminum alloy with split skirt, the cut in the skirt now being carried vertically to the third ring groove from the top and then at right angles to both sides partway towards the piston pin bosses, at the bottom of the third ring groove. Five  $\frac{1}{8}$  in. piston rings are fitted above the pin with one  $\frac{1}{8}$  in. oil control type ring on the skirt. Full floating  $1\frac{1}{4}$  in. piston pins, which are of 1020 carbon steel, case hardened and ground, are assembled with a wringing fit in the piston without bushings. Conventional I beam heat treated alloy steel connecting rods are used. These are 11 in. between centers, the lower bearing being  $2\frac{1}{4}$  in. in diameter,  $2\frac{1}{2}$  in. long and of the bronze backed babbitt lined removable shell type.

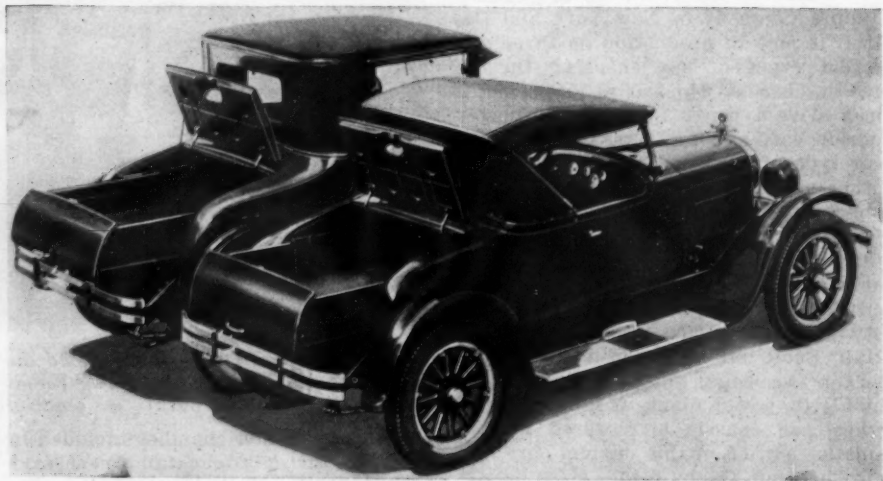
## Gabriel at Strong Pace

CLEVELAND, O., April 4.—Shipments of Gabriel snubbers from the factory at Cleveland so far this year indicate that the total for the first quarter will be more than 25,000 sets ahead of the corresponding period in 1926. According to J. M. Fitzgerald, Gabriel distributor, production is now between 12,000 and 13,000 units a day and present demands forecast the necessity of increasing this almost immediately.



# New Dodge Brothers Bodies Provide Double Utility

**A**NNOUNCEMENT has been made by Dodge Brothers, Inc., that both the standard coupe and roadster models can now be purchased at \$100 additional cost equipped with a sliding drawer, permitting adaptation for commercial uses. The telescoping drawer, which is made of steel, with electrically welded joints, is built into the rear and is adjustable to three locking positions. When not in use it is left closed, with the hinged rear compartment top down, which gives the appearance of the standard coupe or roadster. When the sliding drawer is provided the tire carrier is mounted on the left running board forward of the door.



*Telescoping drawers are now furnished on Dodge Brothers coupe and roadster at \$100 extra cost. Three locking positions are provided. When not in use car resembles standard model*

## New Continental Engines for Bus Service

**N**EW engines designed specifically for bus use are being placed on the market by Continental Motors Corporation of Detroit. These engines, known as models 15H, 8T, and 16T, are of a general design closely following those of engines 14H, 7T and 14T, respectively, dimensional data being identical, but embody such features as counterbalanced crankshafts, aluminum alloy pistons, oil filters, and nickel iron cylinder heads and blocks, in order to make the engines adaptable for the hardest kind of service.

Three half inch screws are used to attach the forged 1020 S. A. E. steel counterweights to the seven-bearing crankshaft cheeks. Effective bearing loads and wear have been materially

decreased by this change. The crankshafts themselves are of alloy steel. No changes have been made in connecting rod design, but Nelson type pistons have been adopted as standard to minimize expansion. Both cylinder blocks and heads are now cast of nickel alloy iron, the head embodying a dome type of construction allowing the use of dual ignition when desired. Provision for two spark plugs is made in all cylinder heads. One of the features of design in the cylinder blocks is the use of a form of baffle in the water jacket which in effect produces a cored

passage directing the flow of cooling water directly at the exhaust valve stem guides and seats. Valves are somewhat different in construction, embodying a tapered retainer lock ring groove instead of the straight groove used in the 14H, 7T and 14T engines, to minimize chance of valve stem breakage. In the exhaust manifolds a change from former practice has also been made and these are now attached to the blocks by means of crabs at the ends to reduce chance of cracking in heavy service.

Three and a half per cent nickel iron is used for the front end timing gears on the new bus engines providing greater hardness and longer wear.

In order to carry out completely the plan of providing stiffer construction in these engines than was formerly available, flywheel housings are cast iron as compared with aluminum used in former Continental Bus engines. The three cubic foot air compressor, in line with these changes, is now mounted on trunnions instead of brackets, forming a more secure support and allowing for better alignment.

Further advances in design, intended for the reduction of maintenance work are found in the adoption of a Hall Winslow oil filter as standard on these engines, and a new design of water pump, incorporating a longer rear bushing fitted with an outside packing nut. The impeller and driving flange in the new pump are pressed on, and large capacity grease cups are incorporated on both bushings to furnish positive lubrication.

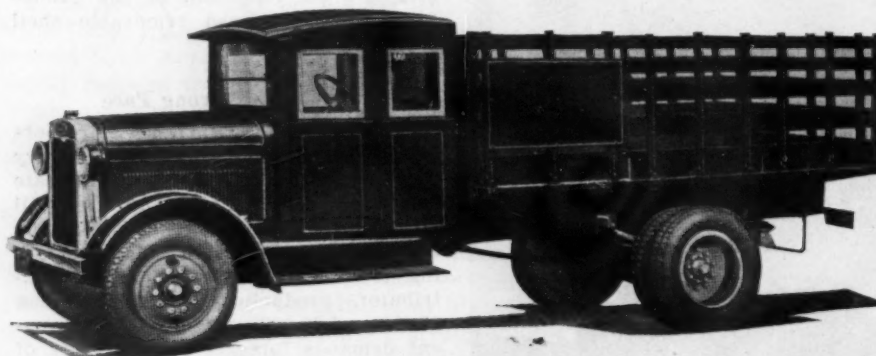
## Gramm Fast Express

**A** NEW Gramm model, The "Fast Express," a companion to the Gramm Fast Freighter" which went into production in January, is announced by B. A. Gramm, president and treasurer of Gramm Motors, Inc.

The Fast Express is a 2½ ton chassis low bed, mounted on 32x6 pneumatic

tires dual rears and rated at a maximum 45 miles per hour sustained speed.

It is powered by a 80 horsepower six cylinder engine, is equipped with four forward speed transmission and has an oversize full floating rear axle. The radiator is unusually large and a new hood design blends perfectly to the cab.



*Gramm Fast Express*



# New Principle Used In Carter Carburetor

*Action of Model DRHO Used on 1927 Nash Light Six Explained*

**T**HE latest model offered by the Carter Carburetor Corporation of St. Louis, Mo., is called Model DRHO and is standard equipment on the 1927 Nash Light Six. It is here illustrated.

This model, like all recent Carter models, is of the multiple-jet plain-tube type with adjustments for both high and low speeds.

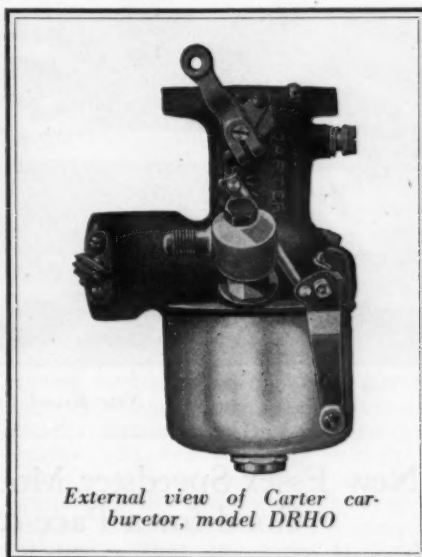
Its unique feature is a special patented choking device, shown in the sectional view. It consists of a cone shaped element which slides up and down on the stand-pipe. This is called a venturi choke, because its function in choking is to shut off the throat of the venturi tube forcing all air drawn to the cylinders through the carburetor well. In this manner not only is an exceptionally efficient starting mixture secured, but it becomes practically impossible to overchoke the engine because the main air column is not restricted.

In a test made by the Nash distributor at Winnipeg recently unusually prompt starting was secured at temperatures from 25° to 30° below zero.

A description of the carburetor as illustrated follows:

Low speed jet assembly supplies gasoline to engine when idling and up to approximately 15 miles per hour, gasoline flowing through a drilled passage connecting low speed jet chamber with carburetor well. At idle, gasoline is drawn through low speed jet and idling port at edge of throttle valve. Idle adjustment screw regulates amount of air entering this port. Backing out adjustment screw admits more air and consequently makes idling mixture leaner.

Vertical jet in base of multiple jet nozzle feeds gasoline direct to nozzle chamber. High speed adjusting needle supplies gasoline to carburetor well. From this well a combination of gasoline and air is drawn into nozzle chamber through accelerating jets on side of nozzle intermingling with fuel from



*External view of Carter carburetor, model DRHO*

vertical jet, the combination forming a fine spray which is carried by stand pipe to venturi, or main air passage, where it is absorbed by incoming air forming mixture on which engine operates. Jets on side of nozzle come into operation in direct proportion to throttle position. The further the throttle is opened, the more jets are in operation. At wide open throttle all jets are working and engine is getting maximum supply.

A special choking device insures prompt starting and prevents motor from stalling even in the coldest weather.

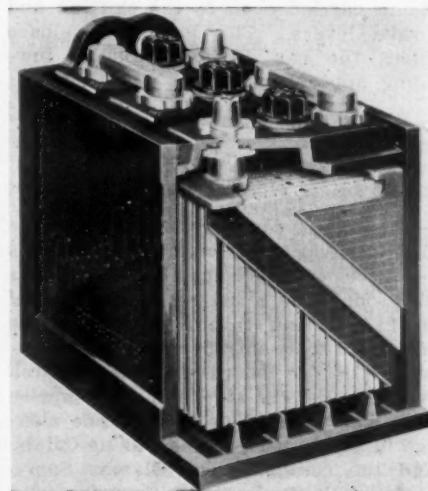
The starting mixture has been as carefully calibrated as the standard running mixture and when engine is cranked over the correct proportion of air mingles with a spray of fuel forming a perfect starting mixture. Due to this design which regulates the size of the main venturi air passage the danger of over-choking engine and of crank case dilution is reduced to a minimum. While warming up engine set choke to position where engine runs best push-

ing it in to regular running position when engine is thoroughly warm.

When carburetor is choked or partly choked idle engine speed is automatically increased enough to insure prompt starting and to prevent stalling of engine in traffic during warming up period. If choke is pushed clear in while engine is cold these benefits will be lost. This choke is operated by knob on instrument board.

## New Rubberib Prest-O-Lite Battery

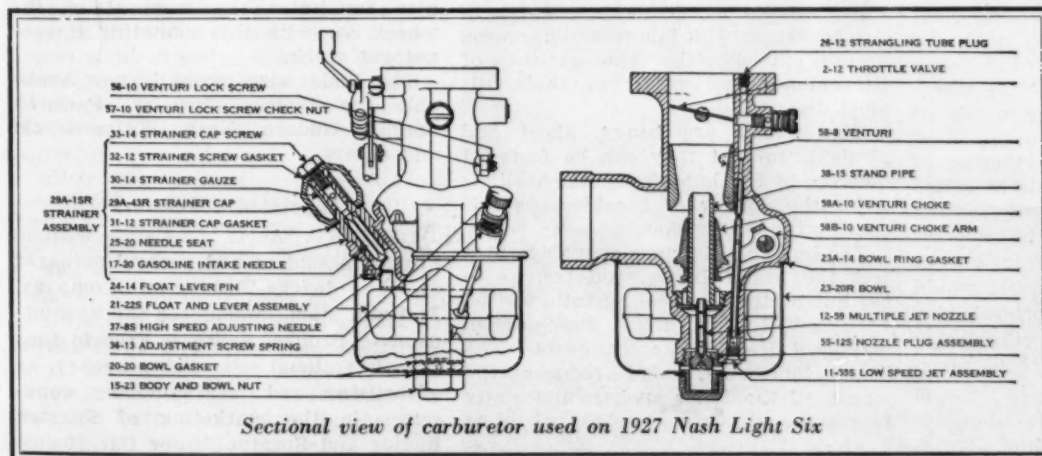
**T**HE use of "rubber-ribbed" separators between the plates of Prest-O-Lite batteries is a new feature announced by the Prest-O-Lite Co., Inc., Indianapolis. It is said that batteries of this type have been in use



*New Prest-O-Lite Rubberib battery, showing the reinforcing ribs of hard rubber*

on Packard cars for three years without the knowledge of the public and that the success they have had in increasing battery life and efficiency has encouraged the manufacturer to make them available for all types of cars.

The new Rubberib battery has separators of candled Port Oxford cedar. The separators are specially treated by a Prest-O-Lite process to increase their porosity and durability. They are then strengthened by triple reinforcements of hard, vulcanized rubber, or ribs, at the points which take the wear.



*Sectional view of carburetor used on 1927 Nash Light Six*

## Special Brougham Sedan on "8-75" Offered by Kissel

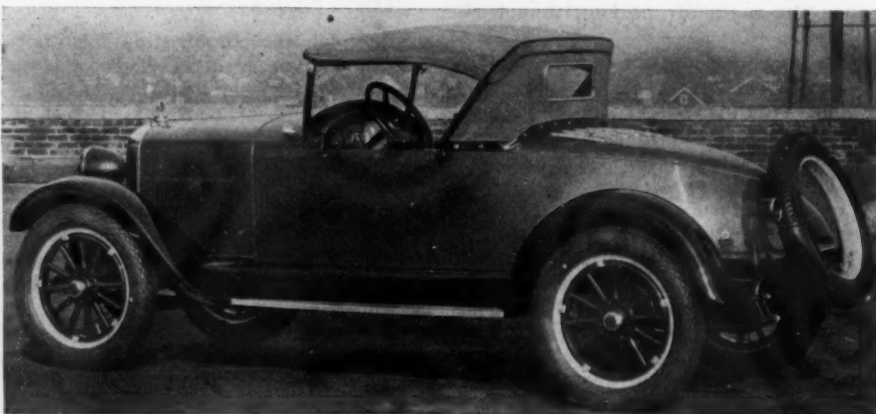
HAVING a wheelbase of 139 inches and designed to meet the demand of the buyer who desires a car with body proportions larger than the standard size the Kissel Motor Car Company announces the addition of a Special Brougham Sedan to its "8-75" line of motor cars. The new model lists from \$2095 up, depending on the equipment desired. Kissel's standard eight cylinder Model 65 has a wheelbase seven inches shorter than that of the new offering.

Choice of two color combinations is offered in the Special Brougham Sedan, one being Lenglen green with black wheels and the other green gray light with Winton green wheels. Use is made of hairline stripes of contrasting colors. Seats are deep and of full-form design and the upholstery is of Chase mohair. The same color scheme employed outside is used on the interior being carried even to the shifting and brake levers. The longer wheelbase gives the car an exceptionally low-hung appearance.



*New Kissel Special Brougham*

## New Essex Speedster Model Which Factory Says Is Good for a Pace of 70 Miles an Hour



*This is the new Essex two-passenger speedster to which reference was made in an item appearing in the March 31 issue of Motor Age. The model lists at \$700 at factory and, equipped with a higher rear axle gear ratio than other Essex models, is said to be capable of a speed of 70 miles an hour*

### To Try Synthetic Gas Production

A powerful company interested in the production of synthetic gasoline has been formed under the title Carburants et Produits de Synthèse, with a capital of five million francs which may be increased to twenty-five millions by decision of the board, says a dispatch from Paris. The stockholders comprise practically the whole of the mine owners in the North and the Pas-de-Calais, and the companies at Blanzey, Sarre, Moselle, Petite Rosselle, Carmaux, and Bouches du Rhone. The total production of these various companies represents more than 37,000,000 tons.

The new company has been formed for the chemical treatment of such combustibles as coal and lignite and their solid, liquid or gaseous derivatives, with a view to the production of synthetic gasoline. The president of the company is M. Cuvelette, general manager of the Mines de Lens, while the list of members of the board includes the names of practically all the directors of the mines in the north of France.

Speaking at the initial gathering of the new company, M. Cuvelette stated that there was no intention of creating a monopoly, for even if only one quarter of the gasoline needs of France were met, the capital to be invested would probably be in the neighborhood of a milliard of francs; there was thus room for all. Opportunities would be given to other industrial groups to join in with them, on condition that they accepted the common discipline.

## Budd Wire Wheel Inter- changeable with Disk Wheel

THE Budd Wheel Company has perfected a wire wheel, which in so far as the inherent differences permit, embodies the same qualities of convenience and safety as their all-steel disc wheel.

The spokes are heavy, short and straight, so that they can be fastened directly to the hub shell, which eliminates the danger of breaking, experienced with bent spokes.

The hub shell is large enough to protect the brake drums, and fastens to the hub on the identical mountings used for the Budd-Michelin disk wheel, making it literally interchangeable. The large hub shell also reduces the length of the inner spokes, materially increasing the strength of the wheel as a whole.

This new wire wheel is mounted with the Budd self-centering and self-tightening cap nuts, which prevent the wheel from riding on the studs and eliminate the danger of distorting the stud-holes and possibility of a loose wheel. It also facilitates the removal of the wheel, for with this mounting it cannot get stuck.

The Budd wire wheel is now available for Dodge, Chrysler, Packard, Jordan, Hudson, Nash, Willys-Knight and others.

### Appointed Counselors

DETROIT, April 2.—Capt. William Sparks, president and general manager of the Sparks-Withington Company, Jackson, Mich., announces the appointment of Brooke, Smith & French, Inc., Detroit national advertising agency, as advertising and merchandising counselors in the marketing of Spartan Radios and Spartan Motor Car Horns.



# The READERS CLEARING HOUSE

Questions And  
Answers



On Dealers  
Problems

## Adjustment of Rayfield On Reo

Supply information on adjusting the Rayfield carburetor as used on a 1924 Reo.—L. Villatte, Frederick Hotel, International Falls, Minn.

FIRST open the idling adjustment two full turns from the closed position and allow this setting to remain until the adjustment on intermediate has been made. The stop arm screw should also be turned a full turn to the right from the closed position. Open the intermediate adjustment  $1\frac{1}{2}$  turns from the closed position. After the engine has been started and is fairly warm, retard the spark and move the throttle



Reo engine and carburetor

lever on the steering wheel quadrant  $\frac{1}{8}$  open. The intermediate adjusting screw should then be turned to the right, a little at a time until the engine shows signs of losing speed, or in other words, until the mixture is very thin. Then turn the intermediate adjusting screw to the left until the engine runs smoothly.

Allow the engine to idle by moving the throttle lever to the idling position. The low speed can then be adjusted by turning the low speed adjusting screw to the right, one or two notches at a time, until the indications are that the mixture is too light. Then it should be turned to the left, three or four notches, until the engine runs smoothly. In order to idle the engine it is necessary that the butterfly throttle on the carburetor be opened very slightly; the

stop arm adjustment is a means of providing a variable throttle opening for idling and at the same time allow a closed hand throttle; otherwise the engine would stop when the hand throttle was closed or the foot accelerator released.

When starting a cold engine close the throttle and hold the carburetor control lever on the steering column clear over to the starting position. When the engine begins firing open the throttle slightly and move the control lever back to the running position as soon as engine will fire regularly enough to allow you to do so. When engine is warmed up this carburetor control lever should always be set at the running position. When the lever is in the starting position it is advisable to inspect the carburetor from time to time to determine that the steering column control lever when set at "start" pulls the eccentric arm on the carburetor back as far as it will go. This arm, when so operated, opens the passage which allows the gasoline to be drawn from the fuel chamber to an outlet above the throttle valve, giving a very rich mixture.

## HUDSON AND ESSEX TREAD

Please tell us what standard tread is, also what the tread is on the 1927 Essex Super Six and latest model Hudson Super Six.—O. L. Curtis & Co., 304 Broadway, Little Rock, Ark.

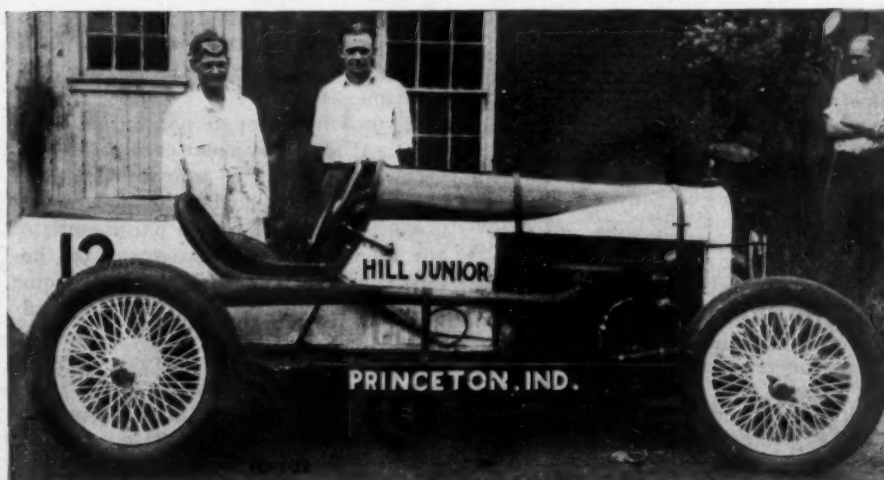
STANDARD tread is 56 in. and this is also the tread of the latest Hudson super six. The tread of the Essex super is  $55\frac{1}{4}$  in.

## Excessive Engine Oiling Not Advantageous

A friend of mine bought a Packard 6 in another city and I asked him why it smoked so terrifically. He said because he had four gallons of oil in the crankcase,  $2\frac{1}{2}$  gallons more than the normal amount. I told him it would foul his plugs and valves and he said the Packard dealer told him to do this for 500 miles. I have been connected with the industry for a long time but have never known of such practice. I have often used a little oil in the first tank of gasoline.—Arthur L. Chadbourne, 1010 W. Roma Ave., Albuquerque, N. Mex.

IN an engine with pistons and rings properly fitted it indicates excessive oil getting to the combustion chamber if the exhaust is full of smoke. Normally the lubrication of the pistons and cylinder walls is taken care of by the spray thrown off from the main and connecting rod bearings. The amount of oil in this particular crankcase is such that the connecting rods are apparently dipping into it very deeply and throwing great quantities of oil on the cylinder walls. We feel there is no necessity of over-lubricating in this manner, although it is desirable to run the car carefully until broken in and it is also permissible to put a small amount of oil in with the gasoline. A quart of oil in about 10 gallons of gasoline will assist in lubricating the inlet valve stems and the piston and cylinder walls. The excessive lubrication that your friend is using however, will do no great harm except for causing excessive carbon formation.

A dirt track racer made by Hill & Swain of Princeton, Ind. It uses an Essex four engine, has 90 in. wheelbase and uses Dayton 28x4 drop center wheels. Engine speed 3800 to 4000 R.P.M. Gear ratio 44/13 to 1. Does a straight mile in 47 seconds. Best time on one half-mile dirt track, 33 seconds. Weighs 1830 lbs. Readers suggestions wanted for increasing speed on dirt track

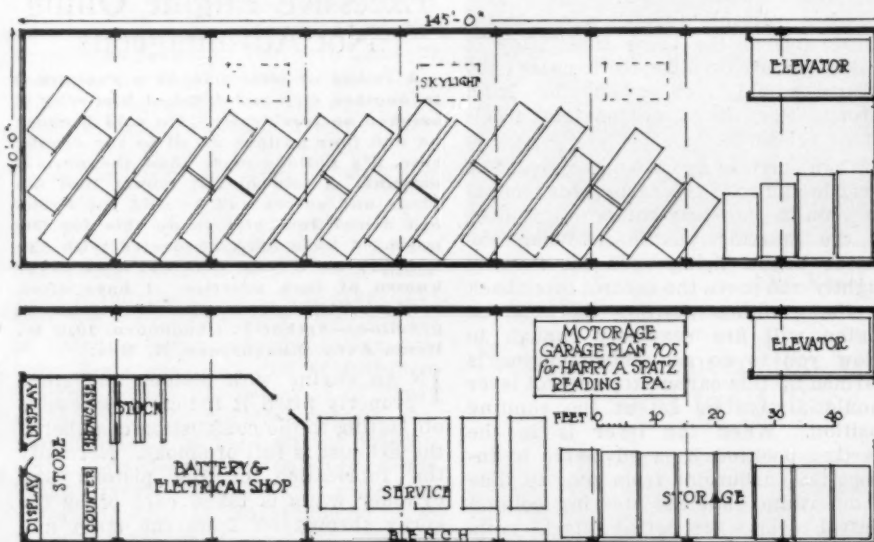




# Planning Your New Building

By Tom Wilder

## A Forty Foot Building Not Ideal for Storage



Service customers and storage customers will not conflict to any great extent in this layout as long as the aisle on the main floor is kept open

Would appreciate it if you would give me a layout for a two story battery and electrical service station with storage on second floor. Lot is 40 by 145 ft. We realize that the width is small for getting the most in spacing, but as same is in heart of business district it looks desirable to me. Plot is enclosed.—Harry A. Spatz, 108 Plum St., Reading, Pa.

A BUILDING as narrow as 40 ft. is not what might be called ideal for storage. As a battery and electrical shop however, it has very good proportions, as cars in service may be stored along one side while the aisle extends along the other. As a storage proposition the principal objection to a narrow building is that cars cannot be stored on both sides of a center aisle, consequently the available storage space is small.

We are suggesting a scheme which could be used on your second floor and which would enable you to store about 50 per cent more cars than you would ordinarily be able to, placing them at right angles and in one row. This scheme of course has the objection that the aisle is too narrow for two cars to pass, but as cars would have to be handled in this building it is not such a great objection. Cars will drive in at the lower door and drive forward onto the elevator. When the elevator reaches the second floor the car will back off and back into its stall or space which should be marked on the floor. Since no car can leave the second floor at the same time one is coming onto the floor from the elevator there is no necessity of having them pass in the aisle. It will, however, slow operations up somewhat because one car will have to be in its place before another one leaves to go onto the elevator.

If it is possible to place the rear doorway in the center of the building as we have done it would be much better, but if this is not possible we would suggest reversing the whole plan so that the front entrance and the elevator will be on the opposite side of the building. Then cars coming down in the elevator can drive directly out of the rear door and cars leaving from the first floor may drive across the elevator and out the rear door.

We would suggest using steel girders spanning the whole width of the building to support the second floor in order to eliminate posts and make handling of cars as easy as possible in the narrow space. The three forward girders and the rear one will be partly supported on partitions and need not be so heavy as the other four.

The car entrance door may be placed at the rear of the passage where it will be more easily operated.

READERS' CLEARING HOUSE

## LEGAL QUESTIONS ANSWERED

By Wellington Gustin

### LIENS IN CAROLINA

In reply to your writup in MOTOR AGE under the heading of "What About Your Liens?" we will appreciate the information as to whether an automobile in the state of North Carolina can be attached for a laborer's lien after it has been delivered on an open account.—Yates Auto Service, Inc., Raleigh, N. C.

I ASSUME from your letter that the automobile in question was delivered to a third party to whom the owner owed a bill on open account. If this be true then you should take action to replevin the car under any lien claim you may have. The laborer's lien or repair lien is superior to any claim or lien arising subsequent thereto, and when the owner of a car upon which you have a lien tries to dispose of same, it becomes necessary that you take action to assert and protect your own claim. If the car is delivered into the possession of another than the owner the ordinary action would be replevin to regain possession if that be disputed, though foreclosure of the lien can be had and possession be recovered in that manner. Replevin is resorted to where you think the car safer in your own possession. The same result might be accomplished by attachment, but the grounds for attachment may not be present.

### ALABAMA LAWS

Please advise as to laws in Alabama in regards to repair lien on mortgaged car. Which claim is superior? What is the best step to take in collecting with or without a lawyer, and on an average what would be the cost of collecting it?—J. Maxwell Lewis, Greenville, Ala.

THE lien of a prior recorded chattel mortgage or conditional sale contract is superior to a lien for repairs, authorized by the owner, but which the mortgagee or conditional seller did not by express words authorize, or by his action impliedly authorize. This is the Alabama rule as laid down in the case of Walden Auto Co. versus Mixon, 196 Alabama 346.

If you have a repair lien on an automobile it is in the usual case safer and better to proceed to enforce the lien, since the lien holds the particular property and, at least, is paramount to any lien or claim subsequent to the repair lien. Then when the lien property is exhausted you can proceed against the debtor for any balance. When you cannot collect your charges in a peaceful manner, it is not safe to engage in litigation without a lawyer. Court costs vary in every state and fees vary in every locality.

# Answers to Readers' Questions

## Durant Lubrication and Carburetion Problems

Will you please tell us how to regulate oil pressure on the Durant 6, 1923 model?—30th Street Garage, Cedar Rapids, Iowa.

A SCREW by means of which oil pressure is regulated will be found in the fan bracket. This is a  $\frac{3}{8}$  in. screw with a slot in the head for a screwdriver. This screw is held by means of a lock nut, which should be loosened with an open end wrench before attempting any adjustment. By turning the screw in a clockwise direction, or in other words, by turning the screw down the oil pressure will be increased.

We understand that this car is still built under the name of Princeton. Is this correct and if so where is the factory located and who controls it?

AT one time it was planned to continue the construction of this car under the name of Princeton, but the car never went on the market. Two or three experimental jobs were put out and carried that name, but the car was never regularly sold as the Princeton.

We have a Durant four that has an oil gage line leading direct from the rear main bearing. We cannot get the pressure to register over  $2\frac{1}{2}$  pounds when new oil is in the car. Pump gears are new and the main bearings are tight. At 10 miles an hour the gage does not show any pressure although a gage attached direct to the pump shows 6 lbs. at this speed.

YOU will find that the gage on this particular model registers low. We were told by a factory representative that very few of the cars register over  $2\frac{1}{2}$  or 3 pounds pressure with the gage that was original equipment, connected as they are when they come from the factory. However, this factory representative went on to state that the amount of pressure was relatively immaterial and that the big thing to watch was that pressure did show as this indicated positively that oil was flowing. In this particular system a large amount of oil is circulated at a relatively low pressure.

What makes a Durant 4 load up on a heavy pull? This car has excellent compression, new spark plugs and has a Tillotson carburetor with high speed adjustment. This car will pull satisfactorily at 5 miles per hour with a lean mixture, but with this setting will not warm up and run properly unless the choke is part way out, until the car has been operated for about 2 miles.

YOU seem to have practically answered your own question when you say that the car operates satisfactorily with a lean mixture. In order to be able to operate with a lean mixture and yet get away from having to keep the choke out for quite a length of

time when starting up, we would suggest that you either make use of a higher test gasoline or arrange to apply more heat to the carburetor or intake manifold if you continue to use the present grade of gasoline. It is evident from what you say that your difficulty is in your carburetion and evidently either one of the suggested remedies will make the car operate satisfactorily.

## SMALL BORE COMPRESSION HIGHER

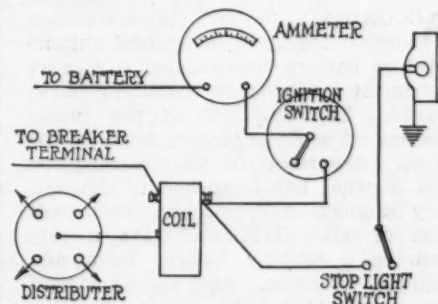
What is the compression on 1927 Buick cars?—New York Repairman.

A 95 lb. pressure for the  $3\frac{1}{4}$  in. bore engine and 79 lbs. for the  $3\frac{1}{2}$  in. bore engine measured on a dynamometer at 500 r.p.m. If checked with compression gage while engine is being turned over with starter the indication will probably be 15 or 20 lbs. lower. In making this test the compression gage should be in one spark plug opening and spark plugs should be in the others.

## SHOP KINKS IDEAS That have been Found Useful

### TRICKY STOP LIGHT WIRING

To prevent discharging battery due to stop light switch sticking I make a practice of connecting to the ignition coil terminal which is connected to the ignition switch. This gives stop light action when engine is running and disconnects the circuit when engine is stopped.—Joe Chesner, 61 Wright St., Milwaukee, Wis.



Readers of MOTOR AGE are invited to submit ideas that they have found useful in doing some particular service job in the shop in a better or quicker way. For each one published \$2.00 will be paid. Whenever possible the idea should be accompanied by a sketch or diagram from which a drawing can be made.

## Heavy Float Will Stop Engine

What would happen should the float in the vacuum tank of a Kingston Oil-Vac system on a Maxwell car become logged?—G. L. Hoehn, Dallas, Tex.

WE understand that the construction of the float is such that there is practically no likelihood of this happening. However, on the assumption that it is possible to weight the float down so that the dump valve would be held on its seat, it would prevent gasoline flowing into the bottom chamber or reservoir. This would in a short time stop the engine on account of lack of fuel. At the same time there would be a tendency for the upper tank to fill up and possibly for the oil pump to draw some gasoline into the oiling system. To prevent any appreciable amount of gasoline being drawn into the oil however, there is a No. 75 hole drilled in one of the connections and any gasoline would have to pass through this very fine opening. As the bottom reservoir only holds from 16 to 18 oz. of fuel it can be seen that the engine would stop before any appreciable amount of gasoline would be drawn into the lubrication system. As many engines operate in winter with a large percentage of gasoline in the crankcase due to heavy fuel which works past the pistons it can be seen that the slight amount of gasoline that might be drawn into the oil in this manner would not compare with the amount of gasoline that gets into the oil in ordinary winter driving.

### FIT PISTONS AS RECOMMENDED

We have been having trouble with cars equipped with aluminum pistons. As soon as they begin to get a little loose they start a tapping noise almost like a loose push rod. Give instructions for swelling these pistons. How can cast iron pistons be expanded?—J. J. Williams, Quinton, Okla.

THE correct remedy for worn pistons is the use of new ones. We have heard of occasional cases where cast iron pistons have been heated in order to expand them. We seriously question however, the reliability of such methods. Cast iron pistons are ordinarily fitted with a clearance of .001 in. for each inch of cylinder diameter. For ordinary aluminum pistons double the clearance is given. For aluminum pistons of special construction however, where the skirt is slit or where an Invar strut is employed a much closer fit can be used. A diametral clearance of .002 in. is recommended in many cases on pistons up to 3 in. diameter. The safest procedure however, is to follow the manufacturer's recommendation.



# Clearing Up Electrical Troubles

## This Charging Scheme Has Possibilities

I wish to rig up a battery charger from a 110 volt, 1500 watt Kohler lighting plant. As I expect to use practically the total capacity for lighting purposes I wish to get away from using a bank of lights or resistance. Is it possible to rig up an extra brush with adjustment so as to get the proper current for any number of batteries. If so, would like to have a wiring diagram.—J. A. Rior-don, Diamond Route Garage, Mineral Hot Springs, Colo.

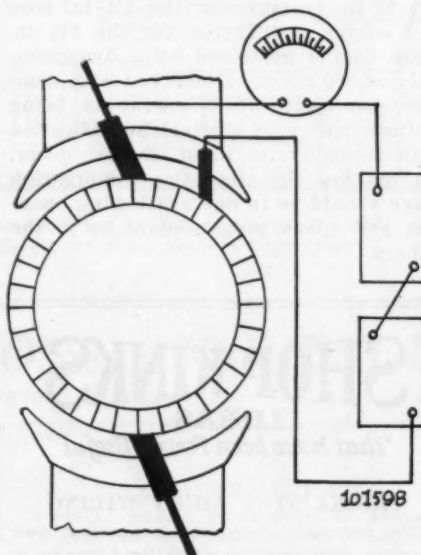
THIS is one of the best ideas we have seen advanced for some time. There are some difficulties in the way of using this method of charging but we believe that with a little experimenting you will be able to get good results. The diagram shows the general plan of the circuit you should use. The first thing to do is to get a high resistance hard carbon brush. The two main brushes touch the commutator at points where there is very little voltage and consequently very little sparking. As you leave the main brush positions, however, you get to commutator bars, between which there is considerable voltage generated. For this reason the third brush which you use for the charging circuit will be short circuiting certain commutator bars. This is a reason for having it narrow and of high resistance, that is, containing a high percentage of carbon and very little copper. If it has much short circuiting effect it may cause burning of the commutator or overheating of the armature or both. Perhaps it would be well to first experiment with the brush and just let it ride on the commutator at about the position shown or perhaps a little farther down to the right to see if any harm results. Then if operation seems to be satisfactory try connecting up a battery or two with an ammeter. First, however, use a voltmeter and test from the main brush to the third brush, these being the two brushes which will be used in charging, to see which one is positive with respect to the other. This is the brush which should connect to positive battery. Then if you can have some sliding arrangement so that this third brush can be moved to various positions you will be able to adjust the charging rate. The nearer the two brushes are together the lower the rate will be and the farther they are apart the higher it will be.

## Killed by a Quack Battery Doctor

I operate a mechanical repair shop and recently took a 6 volt storage battery to a battery station to have it charged. Testing this battery with a high rate discharge tester it showed

Edited By A. H. Packer

a voltage of 2 on one cell, 1.9 on another cell and 1.9 on the third cell. Hydrometer readings were 1150, 1175 and 1175 respectively. After leaving the battery a couple of days I went to the battery station and found it was reverse connected as compared to the other batteries. I also found it as dead as the proverbial door nail. After it had been there a week I decided to take it away as they told me they had changed the acid four times and had also charged it. When I took the battery away one of the cells read 1.5 volts with polarity reversed and the other two cells tested 2 volts each, while the specific gravity was 1250. I am not a battery expert but it was my opinion that when the voltage did not stay up on changing the acid



Using a third brush to pick 14 volts from a 110 volt machine

that it was connected wrong. The battery was used 11 months in a Chevrolet coupe and never failed to turn over the engine with one exception in the dead of winter.—B. F. Steele, Jersey Shore, Pa.

ACCORDING to our understanding and according to recognized authorities on battery construction it is very detrimental to charge a battery backwards. The material of the plates loosens up and the battery is never the same. According to your description this is what has happened to the battery in question. The hydrometer readings of 1150, 1175 and 1175 merely indicate a healthy battery in a discharged condition. Acid should almost never be added to a storage battery. About the only occasion for adding acid would be after a battery had been thoroughly charged until the voltage had come up and until the electrolyte was gassing freely. Then after the battery is allowed to stand for two or three hours if the gravity is below 1280 it is permissible to add acid in order to bring up the gravity.

## Only Misses on Two Cylinders

We have a Studebaker six in our shop, this being a model E 1921 or 1922. It misses on two cylinders at a speed under 12 or 15 miles per hour. We ground the valves, put in new breaker points, distributor cap, cleaned carburetor and adjusted it, set the timing and tried new spark plugs. You can rock it on compression on all cylinders and the spark is hot. It runs fine above 15 miles per hour.—L. B. Hungerford, Spearville, Kan.

THE first thing to do is to see if the trouble is due to ignition. At speeds where the missing occurs remove a wire from a spark plug and hold it  $\frac{1}{8}$  in. from the engine and count the sparks, listening carefully to see if any of them are dropped. Do this at all spark plugs. If you find that it is on certain cylinders where the missing occurs then you might check up on the cam on the ignition shaft. It is possible that wear in the distributor shaft or the bearing in which the shaft rotates permits the cam to wobble around so that at certain times it does not give a good clean break at the interrupter points. If the missing is always in the same cylinders you might try reversing spark plugs between good and bad cylinders, to see whether the trouble goes with the plug or stays with the cylinder. Another thing to watch out for is high tension wiring where the rubber looks to be good but is old and cracked, and where it may run through a metal conduit and permits the spark to jump through the rubber. This would probably give you trouble at high speed and under heavy pulling, however, instead of at low speed.

## OVERLAND GENERATOR REGULATION

How is the generator output regulated on an Overland model 93? David Elsberry, Cando Motors Co., Cando, N. D.

THE cover band is removed and the third brush is shifted by hand. Friction washers are used to hold the third brush assembly so that there is no nut to be loosened and tightened again.

What speed does the Ford generator run to generate 15 amp?

THE generator is ordinarily not supposed to produce this much current. In the Standard Manual the peak current is given at 14 amp., obtained at a generator speed of 1450 r.p.m. However, in winter if the car is only operated on the short runs it is permissible to run the current up to 15 or 18 amp. This is done by moving the third brush in the direction of armature rotation. This of course will give a higher charging rate at a comparatively low speed but official data is not available as it will vary with each setting of the third brush.



# Answers to Readers' Questions

## Buick Four Wheel Brake Adjustments

Can you give instructions for making brake adjustments on 1927 Buick cars?  
—New York Repairman.

WE are publishing a diagram which shows the layout of the Buick brakes. Maximum braking effect and smoothness of operation as provided in the design of the four wheel braking system are obtained when the following four conditions exist:

**Pedal Travel**—Pedal should travel 5 ins. and this travel will be had if band clearances and lever positions are correct.

**Equalizer Action**—When brakes are in release position, equalizer bar should be directly under and parallel to the long cross brake shaft. When brakes are applied equalizer bar should still be parallel to the shaft.

**Band Clearance**—A clearance of approximately  $\frac{1}{8}$  in. between lining and drum should be had for entire circumference.

**Lever Positions**—When brakes are in release position, levers should return to stops provided.

### Adjusting Brakes and Checking Rods and Levers

1. Jack up the four wheels.
2. Lubricate all working parts of the brake system. Care must be exercised in keeping all lubricant away from linings.
3. Try all working parts to determine if each shaft and connection is free. When brakes are released, foot pedal must come to within  $\frac{1}{8}$  in. of toe board and levers should snap back against their stops as follows.

Rear brake lever stop screw No. 1 should return against clamp on hand brake camshaft. Correct setting of this stop screw will bring pin No. 13 in a position  $1\frac{1}{8}$  in. from center line of adjusting rod No. 7 for 114½ in. wheelbase and  $1\frac{1}{8}$  in. for 120 in.-128 in. wheelbase model; this pin being located toward the axle. See view A.

Stops for front brakes are located inside the brake drum and are not adjustable. To determine if front brakes return to full release, disconnect pin No. 14 and work brakes by hand, allowing them to snap into release position. Lever No. 12 should return against stop.

4. Adjustment of Brakes. The brake pedal should travel approximately 5 in. and the equalizer must set parallel to the supporting shaft

when the brakes are released or locked. To obtain this, proceed as follows:

- a. Release right front and rear brakes by turning adjusting nuts No. 6T and 6B and adjust left front and rear brakes as follows:
- b. Adjust at the brake anchor by turning adjusting screw No. 8 so that when the wheel is revolved the lining clears the drum at this point by  $\frac{1}{64}$  in. then adjust brake band guides No. 11 on the lower side of front brakes and upper side of rear brakes to get approximately  $\frac{1}{8}$  in. clearance.
- c. The brakes should be rounded to get a uniform clearance between the lining and the drum. If flat spots are found in the bands, use a brake rounding tool between the lining and the drum but do not use a screwdriver or chisel.
- d. Obtain correct pedal travel (approximately 5 in.) and square pulling movement of equalizer by turning adjusting nuts 6T and 6B at the left front and rear brakes.
- e. Note: The clearance between the lining and the drum is governed by two nuts, No. 6T for the longer portion of the brake and 6B for the shorter portion. Both long and short ends of brakes must have same clearance.
- f. Adjust right front and rear brakes same as mentioned in paragraph b, c, and e so that the right and left brakes in each set hold alike.

Lock nuts must be locked with proper wrenches. Do not use pliers.

## Check Chandler Timing On Flywheel

Would like to get the valve timing of a 1920 Chandler, also setting of the ignition.—Reisdorf Garage, 115 Washington St., Auburn, N. Y.

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WHILE a 50 lb. gage will be O. K. you will find that a 30 lb. gage will read high enough and if you use the 50 lb. gage your normal reading will be so low on the scale that it cannot be readily seen. The best place to make the connection for this gage is directly at the bottom of the oil pump.

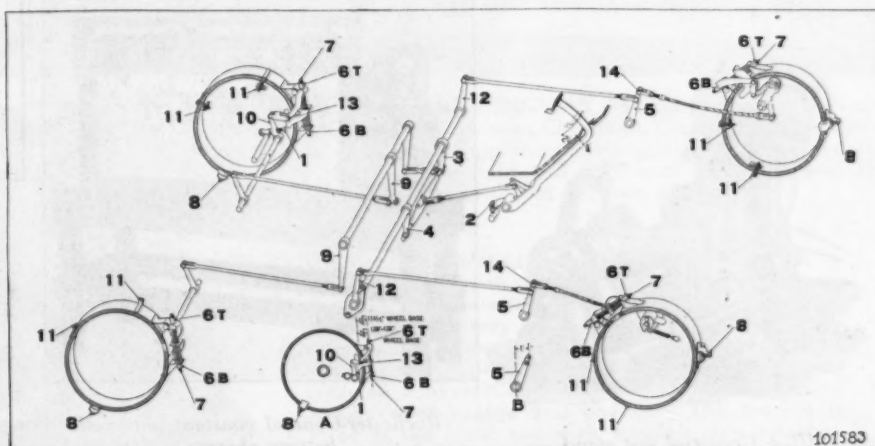


Diagram of Buick four wheel brakes  
(From Buick instruction chart)

# Clearing Up Electrical Troubles

## This Charging Scheme Has Possibilities

I wish to rig up a battery charger from a 110 volt, 1500 watt Kohler lighting plant. As I expect to use practically the total capacity for lighting purposes I wish to get away from using a bank of lights or resistance. Is it possible to rig up an extra brush with adjustment so as to get the proper current for any number of batteries. If so, would like to have a wiring diagram.—J. A. Riordon, Diamond Route Garage, Mineral Hot Springs, Colo.

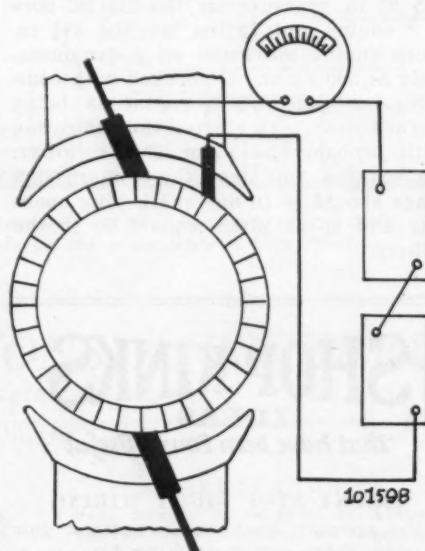
THIS is one of the best ideas we have seen advanced for some time. There are some difficulties in the way of using this method of charging but we believe that with a little experimenting you will be able to get good results. The diagram shows the general plan of the circuit you should use. The first thing to do is to get a high resistance hard carbon brush. The two main brushes touch the commutator at points where there is very little voltage and consequently very little sparking. As you leave the main brush positions, however, you get to commutator bars, between which there is considerable voltage generated. For this reason the third brush which you use for the charging circuit will be short circuiting certain commutator bars. This is a reason for having it narrow and of high resistance, that is, containing a high percentage of carbon and very little copper. If it has much short circuiting effect it may cause burning of the commutator or overheating of the armature or both. Perhaps it would be well to first experiment with the brush and just let it ride on the commutator at about the position shown or perhaps a little farther down to the right to see if any harm results. Then if operation seems to be satisfactory try connecting up a battery or two with an ammeter. First, however, use a voltmeter and test from the main brush to the third brush, these being the two brushes which will be used in charging, to see which one is positive with respect to the other. This is the brush which should connect to positive battery. Then if you can have some sliding arrangement so that this third brush can be moved to various positions you will be able to adjust the charging rate. The nearer the two brushes are together the lower the rate will be and the farther they are apart the higher it will be.

## Killed by a Quack Battery Doctor

I operate a mechanical repair shop and recently took a 6 volt storage battery to a battery station to have it charged. Testing this battery with a high rate discharge tester it showed

Edited By A. H. Packer

a voltage of 2 on one cell, 1.9 on another cell and 1.9 on the third cell. Hydrometer readings were 1150, 1175 and 1175 respectively. After leaving the battery a couple of days I went to the battery station and found it was reverse connected as compared to the other batteries. I also found it as dead as the proverbial door nail. After it had been there a week I decided to take it away as they told me they had changed the acid four times and had also charged it. When I took the battery away one of the cells read 1.5 volts with polarity reversed and the other two cells tested 2 volts each, while the specific gravity was 1250. I am not a battery expert but it was my opinion that when the voltage did not stay up on changing the acid



Using a third brush to pick 14 volts from a 110 volt machine

that it was connected wrong. The battery was used 11 months in a Chevrolet coupe and never failed to turn over the engine with one exception in the dead of winter.—B. F. Steele, Jersey Shore, Pa.

ACCORDING to our understanding and according to recognized authorities on battery construction it is very detrimental to charge a battery backwards. The material of the plates loosens up and the battery is never the same. According to your description this is what has happened to the battery in question. The hydrometer readings of 1150, 1175 and 1175 merely indicate a healthy battery in a discharged condition. Acid should almost never be added to a storage battery. About the only occasion for adding acid would be after a battery had been thoroughly charged until the voltage had come up and until the electrolyte was gassing freely. Then after the battery is allowed to stand for two or three hours if the gravity is below 1280 it is permissible to add acid in order to bring up the gravity.

## Only Misses on Two Cylinders

We have a Studebaker six in our shop, this being a model E 1921 or 1922. It misses on two cylinders at a speed under 12 or 13 miles per hour. We ground the valves, put in new breaker points, distributor cap, cleaned carburetor and adjusted it, set the timing and tried new spark plugs. You can rock it on compression on all cylinders and the spark is hot. It runs fine above 15 miles per hour.—L. B. Hungerford, Spearville, Kan.

THE first thing to do is to see if the trouble is due to ignition. At speeds where the missing occurs remove a wire from a spark plug and hold it  $\frac{1}{8}$  in. from the engine and count the sparks, listening carefully to see if any of them are dropped. Do this at all spark plugs. If you find that it is on certain cylinders where the missing occurs then you might check up on the cam on the ignition shaft. It is possible that wear in the distributor shaft or the bearing in which the shaft rotates permits the cam to wobble around so that at certain times it does not give a good clean break at the interrupter points. If the missing is always in the same cylinders you might try reversing spark plugs between good and bad cylinders, to see whether the trouble goes with the plug or stays with the cylinder. Another thing to watch out for is high tension wiring where the rubber looks to be good but is old and cracked, and where it may run through a metal conduit and permits the spark to jump through the rubber. This would probably give you trouble at high speed and under heavy pulling, however, instead of at low speed.

## OVERLAND GENERATOR REGULATION

How is the generator output regulated on an Overland model 93? David Elsberry, Cando Motors Co., Cando, N. D.

THE cover band is removed and the third brush is shifted by hand. Friction washers are used to hold the third brush assembly so that there is no nut to be loosened and tightened again.

What speed does the Ford generator run to generate 15 amp?

THE generator is ordinarily not supposed to produce this much current. In the Standard Manual the peak current is given at 14 amp., obtained at a generator speed of 1450 r.p.m. However, in winter if the car is only operated on the short runs it is permissible to run the current up to 15 or 18 amp. This is done by moving the third brush in the direction of armature rotation. This of course will give a higher charging rate at a comparatively low speed but official data is not available as it will vary with each setting of the third brush.



# Answers to Readers' Questions

## Buick Four Wheel Brake Adjustments

Can you give instructions for making brake adjustments on 1927 Buick cars?  
—New York Repairman.

WE are publishing a diagram which shows the layout of the Buick brakes. Maximum braking effect and smoothness of operation as provided in the design of the four wheel braking system are obtained when the following four conditions exist:

**Pedal Travel**—Pedal should travel 5 ins. and this travel will be had if band clearances and lever positions are correct.

**Equalizer Action**—When brakes are in release position, equalizer bar should be directly under and parallel to the long cross brake shaft. When brakes are applied equalizer bar should still be parallel to the shaft.

**Band Clearance**—A clearance of approximately  $\frac{1}{8}$  in. between lining and drum should be had for entire circumference.

**Lever Positions**—When brakes are in release position, levers should return to stops provided.

### Adjusting Brakes and Checking Rods and Levers

1. Jack up the four wheels.
2. Lubricate all working parts of the brake system. Care must be exercised in keeping all lubricant away from linings.
3. Try all working parts to determine if each shaft and connection is free. When brakes are released, foot pedal must come to within  $\frac{1}{8}$  in. of toe board and levers should snap back against their stops as follows.

Rear brake lever stop screw No. 1 should return against clamp on hand brake camshaft. Correct setting of this stop screw will bring pin No. 13 in a position  $1\frac{1}{8}$  in. from center line of adjusting rod No. 7 for 114½ in. wheelbase and  $1\frac{1}{8}$  in. for 120 in.-128 in. wheelbase model; this pin being located toward the axle. See view A.

Stops for front brakes are located inside the brake drum and are not adjustable. To determine if front brakes return to full release, disconnect pin No. 14 and work brakes by hand, allowing them to snap into release position. Lever No. 12 should return against stop.

4. Adjustment of Brakes. The brake pedal should travel approximately 5 in. and the equalizer must set parallel to the supporting shaft

when the brakes are released or locked. To obtain this, proceed as follows:

- a. Release right front and rear brakes by turning adjusting nuts No. 6T and 6B and adjust left front and rear brakes as follows:
- b. Adjust at the brake anchor by turning adjusting screw No. 8 so that when the wheel is revolved the lining clears the drum at this point by  $\frac{1}{64}$  in. then adjust brake band guides No. 11 on the lower side of front brakes and upper side of rear brakes to get approximately  $\frac{3}{8}$  in. clearance.
- c. The brakes should be rounded to get a uniform clearance between the lining and the drum. If flat spots are found in the bands, use a brake rounding tool between the lining and the drum but do not use a screwdriver or chisel.
- d. Obtain correct pedal travel (approximately 5 in.) and square pulling movement of equalizer by turning adjusting nuts 6T and 6B at the left front and rear brakes.
- e. Note: The clearance between the lining and the drum is governed by two nuts, No. 6T for the longer portion of the brake and 6B for the shorter portion. Both long and short ends of brakes must have same clearance.
- f. Adjust right front and rear brakes same as mentioned in paragraph b, c, and e so that the right and left brakes in each set hold alike.

Lock nuts must be locked with proper wrenches. Do not use pliers.

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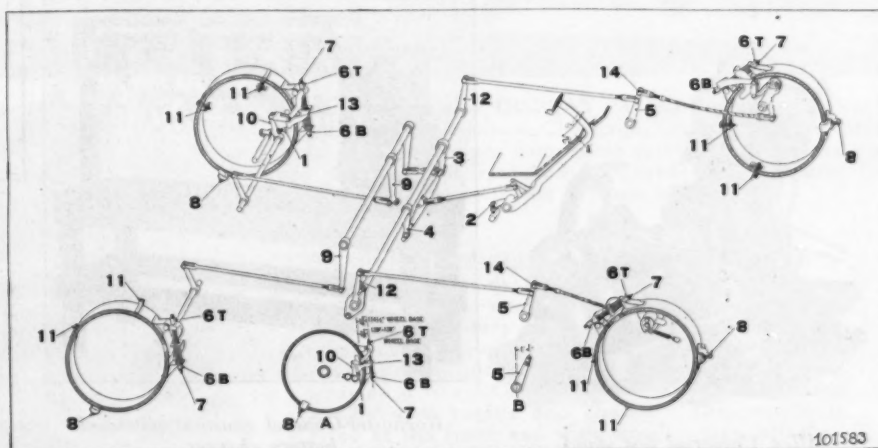


Diagram of Buick four wheel brakes  
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# NEW ITEMS FOR SHOP PROFITS

## Raybestos Wheel Puller

A WHEEL puller known as the "C & G Raybestos Universal Wheel Puller," which can be used to service all cars, is being offered by the Raybestos Co., Bridgeport, Conn. The body of the puller is a one-piece highpoint carbon steel casting weighing 12 pounds. Twenty-four adapters which are quickly interchangeable are provided to make it applicable to any car. The complete set, including wheel puller and 24 adapters in a heavy metal container, is priced at \$60. The wheel puller may be purchased alone for \$12 and adapters may be purchased individually at \$2 each.

A junior model known as the "C & G Raybestos Special Wheel Puller" for Ford, Chevrolet, Dodge Brothers, Flint, Chrysler, Durant, Star and some other cars is offered at \$25.50 with a set of 11 adapters. The wheel puller of this model alone is priced at \$9 and the adapters at \$1.50 each.

## Rochester-General Constant Potential

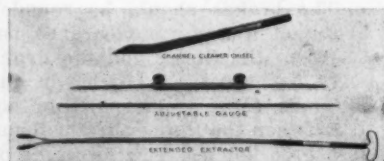
THE General Equipment Corp. of Kalamazoo, Mich., has become the exclusive sales outlet for the Rochester constant potential battery charger made by the Rochester Electric Products Co., Rochester, N. Y. This product will be sold hereafter under the trade name, "Rochester-General."

## Approve A. A. A. Timing Device

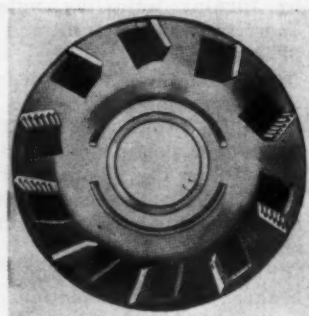
PARIS, March 26—(By Mail)—At a meeting of the International Sporting Commission, held in Paris the timing apparatus used by the Contest Board of the American Automobile Association was approved subject to ratification by the International Association of Recognized Automobile Clubs. The result is that records timed by this machine will be acceptable for international recognition.

## Allen Universal Test Stand

PRICED at \$120, the new Allen universal test stand, E-64, is being offered to the trade by the General Equipment Corp., Allen Division, Kalamazoo, Mich. This stand has been designed primarily for the garage and service station that has enough electrical work to put in a department of its own. It will handle all generators used since 1924 and with a few exceptions all types used prior to that time. It is equipped with a powerful motor, two high grade meters, two adjustable V blocks, bakelite instrument board, high tension spark gap, condenser and condenser switch for ignition testing. It is mounted on a cast iron base.



New Glass replacement tools



Evans Flexible Reamer

## New Flexible Reamer

A NEW valve seat reamer made of flexible steel which is said to do 2300 valve seat jobs before needing re-sharpening has been introduced by the Evans Flexible Reamer Corp., 5665 W. Madison St., Chicago, Ill. This reamer has four nicked teeth that break the scale and the other teeth are smooth to do the finishing. The cutting teeth arranged in two spirals; one set cutting in one direction and the other set cutting the opposite direction. A special pilot stem is available with this reamer. The reamer is made in a variety of sizes and the price is \$2.50 each. The pilot stem is \$1.75. These reamers are offered in three complete sets with pilot stems and ratchet wrenches at prices of \$30 to \$33.50.

## Glass Replacement Tools

SEVERAL new tools for use in replacing automobile glass are being offered by Sommer & Maca Glass Machinery Corp., Chicago, Ill. These tools include a channel cleaner chisel made of tool steel, 16 in. long, shaped to conveniently remove broken glass and fabric from the channels, at \$1.50; adjustable gage for taking accurate measurements of sedan door glass, at \$2.50; and an extended extractor made of brass and spring steel, 36 in. long, for removing broken glass from the lower channels in sedan doors without disturbing the upholstery, at \$5. The complete set of 3 tools is priced at \$8.50.

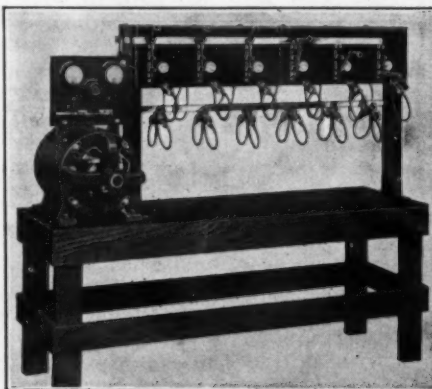
## Foreign Service Sales Grow

WASHINGTON, April 4.—American automobile service appliances for garages and automobile shops in foreign countries are showing an unprecedented growth, totaling in 1926 \$6,860,000, according to export figures for such equipment announced by the U. S. Department of Commerce. The increased foreign business of automobile manufacturers in the sale of trucks and cars is a factor, the report states.

The United Kingdom is the largest export market, taking \$2,168,000 worth of service equipment in 1926; France is second with \$648,000; Canada third, with \$475,000, and Australia fourth with \$439,000.



Allen Universal test stand



Rochester-General constant potential battery charger



Raybestos wheel puller

# Motoring Through Extremes of Temperature

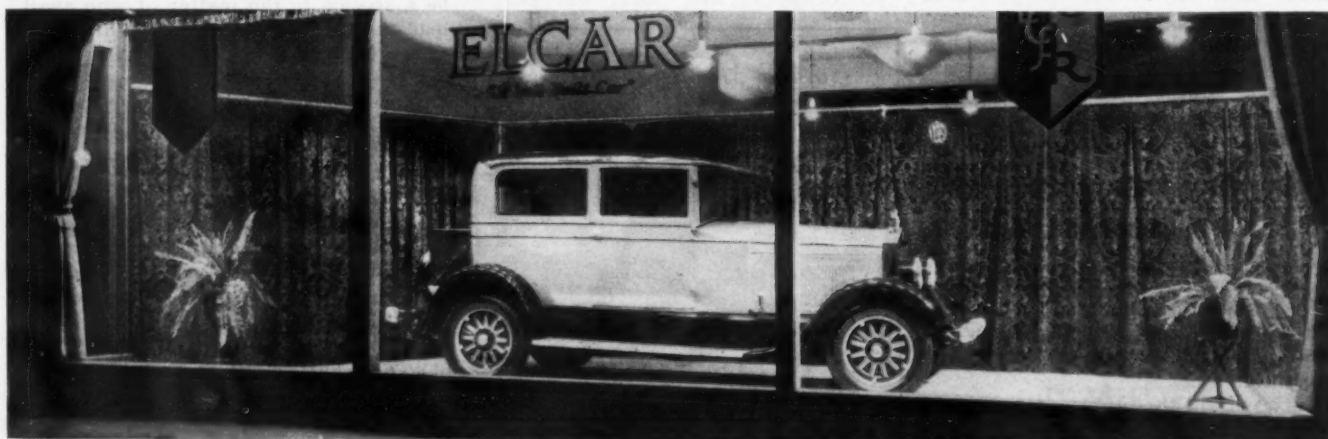


**DEATH VALLEY HAS NO TERRORS FOR CHARLES H. NEWHAUS**, who drove his Peerless across it and through it and around it for a week in search of thrills. The valley is 135 miles long and from 10 to 20 miles wide and generally called the most terrible spot in the world. The Peerless didn't mind the heat in the least nor the lack of water. The going wasn't so good, however, though they came through without an accident

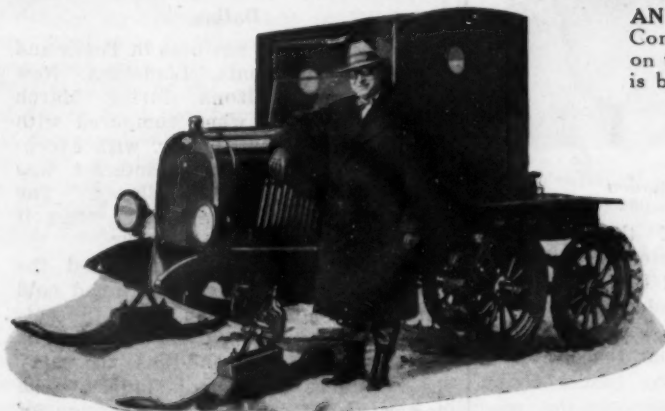
At the left, in Death Valley temperature goes as high as 138 degrees, while the rig at the bottom of the page used in northern Michigan must cope with snow and 40 degrees below zero



**RED FOSTER OF OKLAHOMA CITY** claims the largest exclusive tire sign in Oklahoma; we are sure his Ford runabout has the largest tires of any Ford in the world



**AN UNUSUAL WINDOW DISPLAY** staged by the Baston-Prentice Company, Elcar distributors at Cleveland, Ohio, centers all interest on the car. Rich hangings completely surrounding the car which is bathed in a flood of light and thus made the most prominent object in the 40 foot expanse of plate glass



**CHARLES SURRELL** of the firm of M. Surrell & Son, Chevrolet dealers at Newberry, Michigan, faced with the necessity of making long trips through a territory frequently covered with snow drifts 20 ft. deep and where temperatures often hover around 38 degrees below zero, has constructed a novel Chevrolet "snowmobile" utilizing a Chevrolet engine and chassis. The vehicle is fitted at the front end with wooden skis, attached to the regulation Chevrolet axle and steering knuckles. The rear end of the car is fitted with double Chevrolet wheels and cleated belts



# NEW CAR SALES TREND MAKES A

## First Quarter Not So Good as That of 1926

### Trade Looks Forward to Improved Business in the Period Ahead

NEW car sales throughout the country took a moderate seasonal swing upward in March compared with February but the month still found the trade running more or less behind the pace for the same month of last year, save in spots. On the whole, last month's business was not up to the level of March a year ago, the general and frequently large reductions in sales by Ford tending to hold down the total for the full field. In many localities, however, the makes other than Ford have been holding their own on the basis of early 1926 comparisons. In numbers of other regions the makes exclusive of Ford failed to find buyers during the first quarter at the high rate which obtained during the first quarter of 1926. Eliminating Ford it is possible that business for the first three months equalled or at least approached last year's volume in the corresponding period.

Business in the automotive field usually is subject to considerable fluctuation and uncertainty in the first three months of the year and consequently the trade looks to months immediately ahead to offset losses realized in the first quarter of 1927. Factory executives who have been touring the country send in favorable reports on field conditions. While used car stocks, now being moved better, are too large for comfort here and there, new car stocks are at a low level generally, a situation which means that the dealer who successfully manages the reduction of his resale vehicles should be in a good position to reap a good profit in the year's car merchandising activities.

It is apparent that 1927 is to go down as a constructive year in the maintenance end of the business, the effect of much national campaigning, more intense factory interest and an awakening on the part of the automotive merchant. A growing tendency can be seen in the trade to give more attention to the cultivation of service opportunity, a factor which doubtless is figuring in the good health of many establishments that have not sold so many cars so far this year as last.

Following are reports from a number of key cities on business in March:

#### Columbus, O.

Columbus dealers and distributors report slightly better business in March than prevailed in February of this year,

but records are still about 20 to 25 per cent less than March of last year. While weather conditions were not the most favorable, still there was a considerable period of excellent weather, which stimulated trade in passenger cars to a certain extent.

The used car trade has likewise been slow and extra efforts have been put forth to dispose of rather large stocks of second hand vehicles.

Commercial vehicle business has been rather fair, although sales have not been up to the records of a year ago.

Farmer business is slow in starting this spring, due largely to the inability of farmers to dispose of their last year's crops. Late gathering has interfered with marketing conditions. But there is considerable interest shown in passenger cars in rural sections and a better trade is expected soon.

#### Cincinnati

Disappointment in many quarters over business during December, January and February was relieved by splendid March showing of sales by nearly all motor car lines in Cincinnati. Even with the increase in March, however, some few dealers reported the month was not up to expectations.

All of the dealers feel confident that the next 90 days will bring the usual spring rush and are of the opinion that business through the fall season will bring the volume for 1927 up to that of last year.

#### Named Manager of Olds Branch in Chicago



L. J. Blunden

Management of the Chicago branch of Olds Motor Works now is in the hands of L. J. Blunden, who has succeeded the late Charles H. Hurst. Mr. Blunden was promoted from the post of assistant manager.

#### San Francisco

New car sales for the San Francisco territory for March were about 12 per cent better than for February but still no better, if as good, as those of March last year. Owing to intensive sales efforts Buick sales have held up well and due to new models Chevrolet is selling up to the expected increase. Other makes, including Ford, are going slow.

Rebuilt used cars are below the average for the preceding months of this year, according to dealers. Used cars offered "as is" are not moving.

Due to prospective record crops all kinds of trucks are selling somewhat above February and considerably better than in March last year. Used trucks are always in demand on the Pacific Coast. General business and agricultural conditions are good, but heavy rains and general public opinion that further price reductions are to be made have acted as sales resistance.

#### Minneapolis

So far as delivery by retail automobile dealers is concerned the soft roads following snow tieups has put a temporary stop to actual driving even of buses, in some parts of the Minneapolis automobile distribution district, but it has not cut down appreciably delivery to retailers of automobiles by leading makes. Although there is a decline in some makes there is to offset this a gain by others. The situation seems to be a seesaw in the matter of who shall lead in the monthly registration of new cars.

The used car business is good and a move is being made to standardize the method of taking in and reselling these cars, beginning April 5 with a state dealers meeting. Roads still are bad enough to hinder the sales of accessories by traveling men and trucks are barred from other than paved roads by state commission order. Federal reserve reports for February as of March 28 are to the effect that business activity in the Ninth district in February was smaller than last year but greater for the average business day than in January.

#### Dallas

The automobile business in Texas and parts of Oklahoma, Louisiana, New Mexico and Arizona during March slowed up a bit when compared with the same month last year, with exception of localities where interest was boosted by automobile shows. The business was a little slower than it was in February.

Dealers and jobbers attributed the decrease in business to continued cold and wet weather which made the cotton and other crops uncertain. The dealers were not inclined to carry heavy stocks in many instances. The lower priced cars, with exception of

# SEASONAL TURN UPWARD IN MARCH

Fords, were about the only makes reporting a gain over the same period last year and over February. The Ford sales showed considerable slumps. Chevrolet sales increased. So did Essex and Dodge Brothers.

The actual retail sales of all makes and models were four per cent under those of February and some six per cent less than for the same period a year ago.

Used car sales were some less than for March last year and for February of this year. Prices have been reduced. Practically all cars now offered by the regular dealers have been overhauled and refinished. Stocks are pretty heavy.

Parts, equipment, accessory, tire, battery and electrical business in March was about the same as for the same month a year ago. Garagemen reported business better than a year ago and better than for last month.

Truck sales slumped with other lines. Most of this business is replacement, or business which involves trades.

## Milwaukee

March sales of passenger cars in Milwaukee and Wisconsin, if Ford sales are left out of the picture, easily held their own with a year ago. The total, including Ford, was somewhat lower, as in January and February, but increases in Chevrolet sales and in about half of the remaining makes more than compensated for the decline in Ford sales.

Wisconsin dealers were favored during the first half of March by ideal spring weather, and by a gradually improving general business situation, although as the month came to a close, a belated blizzard followed by colder weather, seemed to affect sales adversely.

With general business proceeding on a somewhat lower level than a year ago, and a spotty condition continuing, the progress of the automotive trade is considered better than might be expected. Prospects for April are good. May usually is the biggest selling month of the year for a number of reasons, among them the fact that automobiles are assessed as personal property as of May 1.

Official figures show that in February, Ford sales in Wisconsin were 1116, compared with 2010 in February, 1926. This is a loss of 894, against a decline of 735 in total new car sales. Chevrolet increased sales from 803 a year ago to 1061, a gain of 257. Makes which made gains over last year were Chrysler, Essex, Hudson, Franklin, Kissel, Olds, Peerless and Willys-Knight.

## Boston

Retail sales, which showed a tendency to pick up in February, showed some gain during March, but it was not as large as the majority of the dealers

expected. Following the show there was a general drive to close up orders. In some half dozen lines covering different price ranges business has jumped up over a year ago. With others it has been even or just under. Some of the Ford dealers report that they were not doing the business they anticipated.

The used car situation is better now than it was a year ago. Most of the dealers have continued lowering their stocks so that the aggregate on motor row is on an average of 35 per cent under 1926. How much the increase will show when the April deliveries get under way and the old cars are turned in is problematical. It is because of the waiting for the April delivery that many are running their old cars.

Truck sales are reported as satisfactory. Outside New England has not opened up to any great extent in Maine, New Hampshire and Vermont.

## Denver

Car sales, both new and used were slow for March in the Denver territory. This is accounted for by several factors. In the first place it is the natural reaction from the increased buying following the automobile show early last month. Then, too, the fact that cars are assessed for taxation in April holds down buying until after that date. Finally the last three weeks have been very wet and stormy, and the inevitable result is a draggy market. Collections are good, and repossessions few, and it is thought that the middle of April and the return of good weather will show an increased activity. This slowness extends through all lines, particularly in Fords, although country dealers report considerable activity in Fordsons. Chevrolets seem to be holding up better than other cars in their class.

The truck market is distinctly slow, in all classes of trucks.

The renewal of the eight dollar beet contract by the Great Western Sugar

Company is resulting in the contracting of another record breaking acreage. Recent snows have added greatly to the expectations for the wheat crop, and a general feeling of optimism is noticeable all through the farming section. Denver is preparing for a boom with the opening of the Moffat Tunnel this summer.

## Chicago

New car sales for March in Chicago and its immediate territory showed another upward climb, compared with February, according to reports by representative distributors and dealers. A check-up of car sale credits through finance companies also indicates an improvement. While it is too early to give the percentage gain over February or the actual comparison with March, 1926, it appears that the former will prove material and that March, 1927, in the final analysis will compare better with the same month of 1926 than February, 1927, compared with February, 1926. It is apparent that a large portion of the trade is beginning to hit a normal stride for the season. Some dealers have written an unusually large amount of early new car business and some deliveries of winter orders have been made. Periods of good weather have stimulated both new and used car business, resale stocks now moving better.

With the exception of Ford it is safe to say new car sales in Cook county are not more than 15 per cent below last year's level at this time. That was the situation found in state figures up to March 1, Ford at the same time running 47 per cent behind the first two months of 1926. For the entire state Ford was 51 per cent behind and other makes as a group 14 per cent behind. There has been some improvement in truck sales both in the city and outlying regions. Expected improvement in general industrial activity should brace up this and other lines of automotive selling.

## Total U. S. Exports Decreased in 1926 But Motor Vehicles Made Small Gain

WASHINGTON, April 2.—Although America's total export trade in 1926 showed a decrease, motor vehicle exports, amounting to 4.6 per cent of the total, showed a slight increase. The total value of exports for the past year was \$4,808,000,000, about \$101,000,000 less than the year before. Automotive exports totaled 305,364 units, valued at \$223,716,000, 2305 more than in 1925, it was announced here by the Chamber of Commerce.

The automotive increase was entirely in motor trucks and buses. Exports of passenger automobiles in 1926 totaled

238,481, or 5825 less than in the preceding year, with a decline in value of \$8,405,000. Truck and bus exports totaled 66,775 units in 1926, or 8150 more than in 1925, with a gain in value of \$9,376,000. Exports of electric automobiles decreased from 128 to 108. Exports of automobile engines, tires, and tubes all decreased.

Shipments of motor fuels, petroleum and its products in 1926 were \$81,243,000 higher in 1926 than in 1925, of which the greatest increase was in the motor fuel classes, totaling nearly 500,000,000 gallons.



## Price Levels Believed About "Set" for Season

### Industry's Leading Factors Seem Well Committed to Presents Lists

NEW YORK, April 6.—The seasonal upward swing in automobile production and sales is continuing and although for the entire industry the level is still somewhat below that of the same period a year ago, some of the producers are making new records.

The rather spotty condition revealed by reports on individual companies is not symptomatic of an unfavorable market but an indication of current competitive relations. Nor is it by any means true that the large companies are profiting largely at the expense of the smaller ones. Some of the most impressive gains have been scored by comparatively minor factors in the industry.

It is now generally believed that approximately the present price level will endure through the active selling season. Some companies later may make reductions to move cars in preparation for new models, but the most influential factories appear committed to the maintenance of prices which are already low in relation to manufacturing costs.

Dealer new car stocks are generally in good condition. The same cannot be said of used cars except in territories where dealers have adhered to fairly sound policies in this department of the business.

Truck production and sales have shown a consistently better record this year than passenger cars, for reasons that are not readily ascertainable. Exports of both cars and trucks are above last year's levels.

### New Hudson Color Schemes

DETROIT, April 1.—Hudson Super Six shipments of custom built 7-passenger sedans and 5-passenger broughams are now coming through in new color combinations. Upper body on both models is black. Lower, on the sedan is light blue and on the brougham Old Burgundy. Moldings of both models are black, light blue and French gray striping being used on the sedans, and Castilian and Casino red on the brougham.

### Record Reo Schedule

DETROIT, April 2.—The Reo Motor Car Co. plans to build 200 passenger cars and 75 commercial vehicles, daily, during April. This schedule is 60 per cent greater than any other month in Reo's history. The figure calls for twice as many passenger cars as the company ever built and four times as many as were turned out in April, 1925. Reo shipments for March aggregated

4,395 units of which 1,613 were commercial vehicles, which is double the business of March, 1925. While March was the second largest month in Reo's history, it is understood that less than half of the March orders on the company's books were filled, and the company now has orders for 10,000 cars in April.

### Studebaker Wins Ramp Climb

The ramp climbing contest recently staged in Washington, D. C., as a feature of the opening of the new million dollar Capital Garage was won by King Richardson driving a Studebaker known as the Commander. The garage is ten stories high and ramps are used in going to upper floors. Richardson in the Studebaker negotiated the series of ramps in one minute and 29 seconds, according to Hanson Ely, Jr., managing director of the garage. This, says Mr. Ely, was the best time made. In the March 31 issue of MOTOR AGE it was stated that 1:34 was the best time made in this contest which obviously was in error.

### Ford Buys L. I. Durant Plant

NEW YORK, April 2.—The Long Island City factory of Durant Motors, Inc., one of the original properties of the company, has been sold to Ford Motor Co. it was learned this week. No statement has been made as to the terms of sale nor the use to which Ford Motor Co. will put the plant. Under Durant ownership the plant has been used for development work and for manufacturing at different periods. Recently it has been only partly occupied as a storage building and a service station for Flint cars in the New York district.

### Ford Official Mum

DETROIT, April 2.—The Ford Motor Co. will neither affirm nor deny that it has purchased the Long Island plant of the Durant Motors Corp.

When asked to make a statement, Mr. Edsel Ford's office referred the matter to Mr. B. J. Craig, secretary of the Ford Motor Co. Mr. Craig said he didn't care to make a statement, adding "Why don't you ask Mr. Durant about it?"

### To Represent Kissel

HARTFORD, Wis., April 4.—The Virginia Motor Sales & Finance Corp. of Richmond, Virginia, has been organized for the purpose of merchandising, servicing and financing Kissel motor cars in eastern and southern Virginia, the Kissel factory announces.

Incorporated for \$300,000 with a big share of stock already subscribed, this new organization will retain headquarters at Richmond and open up a chain of sales and service stations throughout its territory in addition to giving franchises to established dealers in such points as they will not operate their own stores. G. D. Grevely is president of the corporation. H. D. Moring is vice-president and H. J. Hubbard, secretary-treasurer.

## D.B. Six Will Go into Production This Month

### New Models Are Not to Be Available to the Public Until About July 1

DETROIT, April 2.—Dodge Brothers, Inc., will enter on production of its new six cylinder car this month, according to President E. G. Wilmer. It is understood that while production of the car will be started then, that it will not be available to the public until about July 1, as previously announced.

Mr. Wilmer said that while sales and profits during the first two months of the year have shown a reduction as compared with the same period of last year, the company's earnings for this period were in excess of all interest charges, dividend requirements on its preferred stock and the usual reserve for depreciation.

Since the first of March, dealer deliveries have shown a steady increase, he said, while cars in dealers' hands have shown a constant decrease. Production of the four-cylinder car on which important improvements have been made is now 600 a day, he declared.

"The new six cylinder car will go into production next month in plant No. 6, just completed, and the company is already assured of enthusiastic dealer reception for the new product," stated Mr. Wilmer. "Sales and shipments of commercial trucks continue most satisfactory."

### March a Record Month

DETROIT, April 2. — According to Harry F. Harper, president and general manager of the Motor Wheel Corporation, March was the greatest month for sales and deliveries in the history of the corporation. Speaking of the second quarter, Mr. Harper said that April and May promise very heavy production schedules for all units of the corporation.

The corporation has put its first cash dividend for 1927 in the mails. Stockholders received \$275,000, which represented 50 cents a share, and, it is said that a large part of this amount remained in Lansing where the bulk of Motor Wheel stock is owned.

### G. M. Acquires Lovejoy Rights

DETROIT, April 2.—Manufacturing rights to the Lovejoy Shock Absorber has been acquired by General Motors Corporation, through the Delco-Remy Corporation, one of its divisions. The shock absorbers will be manufactured at Dayton under the name Lovejoy, for passenger cars, factory equipment only, for the present. Big production is anticipated to commence immediately, as several large contracts with big producers have already been closed.

## Aggressive Promotion of Star "6" in Durant Plan

### Full Scope of Capitalist's Automotive Program Subject of Rumors

NEW YORK, April 2.—A move toward the consolidation into a single unit of the automotive enterprises in which William C. Durant has been interested was accompanied this week by the appearance of advertisements saying Mr. Durant's "first efforts will be largely devoted to the aggressive promotion of the new Star Six."

Despite this announcement, which tended to confirm the opinion held in automotive circles, rumors of mergers persisted. Another report that gained some circulation was that Durant interests would market a popular small foreign car in the United States.

One of the prevailing rumors was spiced when Dillon, Read & Co. definitely denied having had any conversations with Mr. Durant regarding automobile mergers, or of having any information whatever concerning any undertaking of this character by Mr. Durant.

Durant Motor Co. of New Jersey, controlled by Mr. Durant, has offered to acquire common stock of the Durant Motor Co. of Michigan, an affiliated company, through exchange of six per cent preferred on a share-for-share basis.

The six per cent preferred stock of Durant of New Jersey, which is being offered for exchange, is convertible on or before May 1, 1928, on a basis of one share of preferred for two of common and it is subject to retirement at \$12.50 a share after Jan. 1, 1929. A special meeting of stockholders of the Michigan company has been called for May 5 in Lansing to act on the proposal.

Durant Motors, Inc., which is the parent company of the Durant enterprises, is incorporated under the laws of Delaware with 1,000,000 shares of no par stock. This company, which was organized early in 1921, in May, 1924, acquired Star Motors, Inc.

### May Set Sale Date for Plant

DETROIT, April 2.—Only seven of the 50 largest stockholders in the Auto Body Co., Lansing, appeared at a meeting called by the Central Trust Co., of Lansing, receivers, to discuss plans to rehabilitate the plant. Inasmuch as none of the stockholders present displayed interest in the plan, the receivers' next step probably will be to petition the circuit court to set a sale date when bids on the various Auto Body Co. properties will be asked. Inventories have been taken and some of the materials on hand have been sold.

### Invade Financial District

NEW YORK, April 4.—The first automobile retail showroom to be established in New York's financial district was opened at 79 Fulton Street by the Studebaker Corporation of America. Used cars as well as new are being shown.

### Not Involved in Merger Plans

DETROIT, April 1.—The Motor Wheel Corporation is not involved in any merger plans, as reported in New York financial circles, and furthermore is not interested, H. F. Haroer, president and general manager, told the Chilton Class Journal Co. today. He made the statement when asked whether or not there was any foundation to the report, published in a New York paper, to the effect that Motor Wheel, Kelsey Wheel and Hayes Wheel planned to join forces.

### Tribute to Show Manager

ENID, Okla., April 4.—An elaborately engraved watch was presented to J. Lee Cromwell, who managed the recent automobile show at Enid, by Enid automobile dealers. Sixteen firms displayed 62 cars in one of the state's best attended shows. The total value of cars exhibited was in excess of \$150,000. Mr. Cromwell was given credit for the success of the show by Enid merchants.

### Oil Booms Sell Trucks

OKLAHOMA CITY, Okla., April 4.—New oil booms around Oklahoma City mean one prosperous season for truck men of this district. Every truck dealer has felt the pull of the oil fields and large sales are reported.

### To Apply U. S. Methods Abroad

LANSING, Mich., April 4.—Sales and service methods which have proven successful in application to Oldsmobile domestic sales will be adapted by Olds throughout the world, as a result of a meeting held recently by representatives of the General Motors Export Corporation and officials of Olds Motor Works. The meeting was held at the New York Oldsmobile branch and attended by W. T. Whalen and T. W. Henderson, general manager and general sales manager respectively of the export company, and two score of representatives.

### Firestone Dealers Confer

COLUMBUS, O., April 4.—About 120 dealers in Firestone tires attended a conference held at Columbus by the Columbus branch of the Firestone Tire & Rubber Co. The dealers were from Columbus and about a dozen counties in central Ohio. H. C. McDermott, branch manager of the Columbus branch, conducted the conference.

Preliminary to the conference district sales conferences were held by Mr. McDermott in Zanesville, Newark, Marion, Springfield, Chillicothe and Marietta, which were largely attended by dealers in those districts.

## Accident Requires Brief Period of Rest for Ford

### Car Maker Recovering from Injuries Sustained in Automobile Crash

DETROIT, April 2.—Henry Ford is recovering in Henry Ford hospital of injuries he sustained, Sunday night, in an automobile accident near his home in Dearborn. The motor magnate was alone in a Ford coupe and was driving from his laboratory to his home when the car was side-swiped by a large machine and forced over a 15-foot embankment.

The Ford car ran between two trees on its way down the embankment, but hit a third tree at the bottom and tipped over. Mr. Ford was knocked unconscious but snow and rain beating through the open windows revived him and he made his way several hundred yards to the home of the gate keeper on his estate, who telephoned Mrs. Ford. Mr. Ford was removed to his home and Dr. R. D. McClure, chief surgeon of Henry Ford hospital, summoned. The physician stayed constantly with Mr. Ford until Tuesday night when he was removed in an ambulance to the Ford hospital where he underwent a minor operation.

According to a bulletin Mr. Ford suffered a slight concussion from which he is completely recovered. He has rather severe contusions over the ribs and back with considerable strain of back muscles. There was a transient hematuria and hemoptysis which have cleared up. The operation referred to the fixing of the chest and back by splinting. Mr. Ford's physician predicts that two weeks complete rest will be necessary.

News of the accident was kept from the public until Wednesday, when the fact leaked out that he had been taken to the hospital. The news resulted in the wide circulation of rumors in the industry.

### Robert Wilde Dead

DETROIT, April 1.—Robert Wilde, 56 years old, president of the Michigan Gear and Engineering Co., died suddenly in his home, yesterday. Mr. Wilde was born and educated in South Bend, Ind., when 21 years old, moved to Cleveland, O., where he resided 10 years. In 1902 he came to Detroit and in 1917 organized the Michigan Gear & Engineering Co.

Besides his widow he is survived by a daughter and a brother.

### Make 1100 Buicks Daily

FLINT, April 4.—The Buick Motor Co. will maintain a production schedule of 1100 cars a day, for April, which will be the biggest April in Buick's history.



## Overland's Profits Cut By New Model Expense

### Willys Points to Launching Whippet in Explaining Reduced Income

TOLEDO, O., April 4.—Willys-Overland, Inc., and subsidiaries for year ending Dec. 31, 1926, report net profits of \$1,819,689 after depreciation, federal taxes engineering and development expense liquidation of taxi division, plant and equipment dismantling expenses and interest. This is equivalent after preferred dividends to 22 cents a share earned on 2,526,362 shares of common stock against \$11,422,777, or \$4.36 a share on 2,264,661 shares outstanding in 1925.

Plant assets as of Dec. 31 disclose surplus of \$25,005,319 against \$25,819,582 at the end of the preceding year. Current assets were \$34,286,993 and current liabilities \$8,144,767 against \$42,715,004 and \$5,544,910, respectively, at the end of 1925.

The \$9,412,765 profit from operations was after charges of \$2,550,634 for depreciation of fixed assets and after absorbing exceptionally heavy sales promotion expenses incident to the introduction of the complete new line of cars and the establishment of the new trade name "Whippet," John N. Willys, president, points out in the report. All engineering and development expenditures made during the year, amounting to \$3,430,894, were also charged off.

"The necessary period required for the manufacturing changes preparatory to launching each of the new models in an active selling season resulted in the loss of a ready market for at least 50,000 cars, with a consequent severe loss of income," says Mr. Willys. "In spite of this handicap car sales for the year were 179,103, but the uneven production worked against the normal co-ordination of manufacturing and selling efficiency.

"The year saw the completion of a comprehensive program of plant modernization, equipment rehabilitation and the revamping of manufacturing processes, involving an expenditure of \$12,500,000. This has enlarged capacity and made possible lowered costs. Heavy depreciation and write-offs have established the value of manufacturing plants and equipment as of Dec. 31, at only \$26,718,328 against, \$23,147,957, as of Dec. 31, 1924. Branch property values as of Dec. 31 totaled \$3,753,585, which added to the value of manufacturing plants and equipment above gives the total of \$30,471,914 shown in the balance sheet."

#### Grade Crossing Essay Contest

WASHINGTON, April 4.—Alarmed at the growing list of grade crossing accidents to motorists in the United States, the American Railway Association, from its headquarters here, has

announced the inauguration of a nation-wide essay contest among school children and college students to minimize such accidents.

Figures made public by the association show that a total of 5,921 highway grade crossing accidents happened last year, in which 2,492 persons were killed and 6,991 injured. The number of deaths is an increase of 200 over 1925, and the number injured is an increase of 400 over 1925.

Three prizes of \$250 each are to be awarded for the best essays on "Cross Crossings Cautiously." The contest will close June 1. The essays are to be mailed to the Safety Section of the American Railway Association at 30 Vesey Street, New York City.

#### Texas Dealers Meet Soon

DALLAS, Texas, April 4.—Tentative dates for the annual convention of the Texas Automobile Dealers Association have been set for April 14 and 15 by President Pat Davis of Houston. The meetings will be held in Dallas. It is expected some 800 or 1000 automobile dealers and garagemen will be in Dallas for the convention.

The committees are working out a program for the meeting. The tax problems, the used car question and closer relation between dealers, jobbers and manufacturers are some of the things to be discussed it was said.

#### Oberheu Studies Conditions

DETROIT, April 2.—Fred A. Oberheu, sales manager of United Motor Service, is on a six weeks trip through the southern and western sections of the United States and western Canada to obtain information on field conditions in those regions. During his trip Mr. Oberheu will visit more than a dozen central control branches of United Motors Service besides many authorized distributors and service stations, to study new sales and service policies worked out at the national convention held in Detroit during the winter to celebrate the tenth anniversary of the organization.

Cities which he will visit are: Cincinnati, Atlanta, New Orleans, Houston, Dallas, San Antonio, El Paso, Los Angeles, San Francisco, Portland, Seattle, Vancouver, Calgary, Winnipeg, Minneapolis, Milwaukee and Chicago.

#### Record Order File at Chandler

CLEVELAND, O., April 4.—Since the beginning of January production officials at the Chandler factories have found it necessary to expand their factory personnel by the addition of 1000 men in order to keep pace with the demand for new Chandler Eight and Sixes.

Sid Black, general sales manager, says: "Orders on hand for immediate delivery from distributors and dealers in all sections of the country have never been as large as they are at present, and I have no hesitancy in predicting that 1927 will be Chandler's biggest year."

## Canadian Manufacturers Launch New Association

### All But Two Dominion Car Producing Companies in Organization

OTTAWA, Ont., April 4.—Formal announcement has been made of organization of the Canadian Auto Manufacturers and Exporters Association, with headquarters in Toronto in succession to the Automotive Industries of Canada which was disbanded.

The old organization included all of the motor car manufacturers of the Dominion, along with allied interests.

The new Canadian Auto Manufacturers and Exporters Association includes all of the automobile manufacturers in the Dominion with the exception of the Ford Motor Company of Canada, Limited, Ford, Ontario, and the Willys-Overland, Limited, Toronto.

Major Fred W. Hobart, formerly in charge of the excise tax department of the Department of Customs, Ottawa, has been appointed general manager of the new association and offices have been opened in the Lumsden Building, Toronto.

The primary purpose of the new association, it is stated, is to provide a means of cooperation between the various Canadian companies, particularly in dealings with the Canadian Federal Government.

#### Get Large Overland Territory

PORTLAND, Ore., April 2.—Willys-Overland, Inc., has announced the association of Joseph H. Alfred, L. Y. Billingsley and W. P. Blake, as the Alfred-Billingsley Motor Company, as distributors for Portland, the state of Oregon and the Columbia counties of Washington.

For ten years Joseph H. Alfred has been associated with Willys-Overland, Inc., in an executive capacity and has a wide acquaintance in the Northwest. The Billingsley Motor Co. has been metropolitan representative in Portland for the past ten years, and W. P. Blake has been associated with the company in various capacities for the past eight years. Thirty-four associate dealers have been appointed throughout the territory.

#### Nash Forces Gather

CEDAR RAPIDS, Ia., April 2.—Fifty Nash dealers and service men of this territory gathered here at a sales meeting conducted by R. E. Sproat, service manager of the Chicago branch, L. J. Brady, his assistant, and H. E. Davis, road representative of the Nash. J. J. Voegeli and Fred Marty of the local Nash agency were in charge of the meeting. "Nash Construction" was one of the themes of the meeting.

## Say This Will Be World's Longest Structure Devoted to Motor Car Manufacture



New building in which Dodge Brothers six cylinder car, soon to be announced, will be produced

### All-Time Hudson-Essex Record

DETROIT, April 2.—Hudson-Essex broke all records in its history when 37,000 cars were built and shipped in March. This same production rate will be maintained during April, it was stated, which is an average of 1500 cars a day.

Though Hudson-Essex has maintained a more aggressive pace than ever before in the early months of the year, the company is said to be entering the spring season with very few cars in the hands of the dealers. Since January the demand for both lines has been greater than the company could supply.

April will be the company's greatest export month, with orders for 4500 cars to be shipped overseas. Several of the important distributing points, including New York City, have already oversold their entire April allotments.

### Oakland Increases Schedule

DETROIT, April 2.—The Oakland Motor Car Co. plans to build 22,000 automobiles in April, an increase of 5,000 over March, according to W. R. Tracy, general sales manager.

The company's previous high month was August, 1926, when 17,000 cars were built. The company originally planned to build 14,000 cars in March, but the influx of orders was so great that the schedule was increased to 16,000. Mr. Tracy said that Oakland and Pontiac now have more orders on hand than at any time in history.

Two production lines are now operating in the new Pontiac Six factory and the company is producing 700 cars a day.

### Continental Dividend

DETROIT, April 2.—The board of directors of the Continental Motors Corporation declared the quarterly dividend of 80 cents a share per annum, payable April 30 to stock of record, April 15. With this dividend the corporation will have paid stockholders \$704,338 this year.

## Business Conditions

### Department of Commerce Gives View of Current Situation

As measured by check payments, the dollar volume of trade during the fourth week of March, although smaller than in the preceding week, was substantially greater than in the same week of 1926, according to the weekly statement of the Department of Commerce. Although wholesale prices strengthened, as compared with the previous week, they were still substantially below a year ago. Loans and discounts of Federal reserve member banks receded from the previous week but were larger than a year ago. Interest rates on time money showed no change from the previous week, while call-loan rates advanced; both were lower, however, than a year ago. Building contracts awarded in thirty-seven states were larger than in either the preceding week or the fourth week of March, 1926. Prices of stocks on the New York Stock Exchange showed no material change from the previous week, while bond prices advanced, each averaging higher than last year. Business failures were more numerous than in either the previous week or the corresponding week of 1926. Freight carloadings during the third week were well above last year.

### More G. M. Stockholders

DETROIT, April 4.—On March 12 when General Motors paid the regular quarterly dividend of \$2.00 a share on the common stock for the first quarter of 1927 there were 36,536 common stockholders of record compared with 30,210 common stockholders of record for the fourth quarter of 1926, it has just been announced.

The total number of General Motors common and preferred stockholders for the first quarter of 1927 was 56,520, compared with 50,369 in the fourth quarter of 1926.

## Installing Machinery in New Plant for D.B. Six

### Company Speeds up Tooling Process Preparatory to Production Grind

DETROIT, April 2.—Dodge Brothers new factory, built to provide facilities for manufacture of the six cylinder car to be announced soon, has been completed and the work of installation of machinery is being rushed. According to Dodge Brothers officials this plant will be the longest building in the world devoted to motor car production.

Over 500,000 square feet of floor space are provided in the new building which is located adjacent to the Graham Brothers factory on Lynch road between Mt. Elliott and Van Dyke. A feature of the plant is in the provision for handling of incoming and outbound freight. Two track lines enter the building at one end and extend practically the entire length of the building, accommodating 70 freight cars. Concrete loading platforms at car-floor levels facilitate loading and unloading.

Along one side of the building is a one mile concrete test track. The roadway is 18 ft. wide on the two straight-aways and slightly wider at the banked turns, which have been designed for a safe speed of 40 miles per hour. Other interesting features of the new factory available at this time are the lighting and ventilation systems. The windows contain over 200,000 sq. ft. of glass, 80 per cent of which can be opened for ventilation. There are 120 motor operated sash units, each five feet high and 190 feet long. The heat for the hot water circulating system will be derived chiefly from the exhaust of the steam hammers in the nearby Dodge Brothers forge shop, which is now being wasted.

### Risley Heads Service Group

PHILADELPHIA, April 2.—Dalton Risley, Jr., of the Craveroller Co., was re-elected president of the Automotive Service Association of Philadelphia at the annual meeting of the organization held here. Other officers elected were: First vice-president, C. Harry Walz, Walz Distributing Co., second vice-president, S. V. Rudolph, Hupmobile; treasurer, Joseph C. Dawson, Marmon; secretary, W. H. Metcalf.

### New Pierce "80" Sedan

DETROIT, April 2.—A close coupled five-passenger four door club sedan listing at \$3300 has been added to the model "80" chassis according to an announcement by the Pierce Arrow Motor Car Company. A built-in trunk, bumpers, front and rear, spare tire, shock absorbers, automatic windshield wiper, winterfront and rear vision mirror are included in the equipment. Finish is in optional pyroxylin colors.



## Akron Tire Plants Hit High Stride for Quarter

### Sales and Production Run Ahead of Season's Best Records Since 1920

AKRON, April 4.—Sales and production of automobile tires so far this year by Akron factories have been greater than those in any first quarter since 1920, it was estimated by authorities in the industry.

Following this almost unprecedented activity during a period which is normally slack for the tire business, indications are that the peak output has about been reached for the first half year. Dealers' stocks, which were low at the beginning of the year, have been largely replenished, and dealers from now on will devote more of their attention to the needs of the consumer. Spring dating sales in the last two months have been heavy.

With a few exceptions, leading rubber companies are preparing to ease off a little on tire production so that large surplus stocks will not be accumulated. No substantial curtailments at the factories are anticipated, but operations will not be pushed to the limit as has been the case in the past six or eight weeks.

#### Employment at High Peak

TOLEDO, April 4.—Employment in Toledo has reached a new high peak with 31,940 employed in 51 plants which report each week—the highest point reached in the last five years and 20 per cent greater than at the same time last year.

#### Black & Decker Promotion

CLEVELAND, O., April 2.—R. F. Mitten, formerly territorial salesman for Black & Decker in Southern Ohio and working out of the Cleveland branch office, has been appointed branch manager of the Cleveland territory for the Black & Decker Manufacturing Company, filling the vacancy left by Mr. C. M. Hall upon his promotion to assistant automotive sales manager.

#### More Marmon Field Additions

INDIANAPOLIS, April 4.—Continued rapid expansion in the sales organization of the Marmon Motor Car Company is shown in an announcement of four new distributors and 32 new dealers by H. H. Brooks, general sales director of the Marmon company. This new list brings the total number of new Marmon sales connections in the last month to more than 150.

The new distributors announced by Mr. Brooks are: C. F. Sauer, Sr., Richmond, Va.; Marmon Black Hills Company, Deadwood, S. D.; Davis-Bedwell Company, Bristol, Tenn.; and Thede Motor Company, Peoria, Ill.

## \$187,603,231 Collected by States in Gasoline Taxes from Motorists in 1926

WASHINGTON, April 4.—With an average tax of 2.38 cents per gallon on gasoline, throughout the United States, the gasoline tax yield from motorists during 1926, totaled \$187,603,231, according to figures compiled by the U. S. Bureau of Public Roads. The tax collections would indicate that motorists last year purchased and paid tax on approximately 8,000,000,000 gallons of gasoline.

In four states there are no taxes on gasoline and the bureau estimates that in these four states the gasoline consumed by motorists was 2,000,000,000 gallons, thus making the total gasoline consumption around ten billion gallons,

or 454.5 gallons per year for each of the 22,001,393 vehicles in the United States.

The tax in the various states ranges from 1 to 5 cents per gallon, the average being 2.38. The tax is allocated as follows: \$129,441,520 for state highways, \$43,609,479 for county and local roads, \$5,238,869 for payment on road bonds and \$9,313,363 for miscellaneous purposes. Illinois, Massachusetts, New Jersey and New York are the four states having no gasoline tax. Rhode Island and Texas have the lowest with 1 cent, and Kentucky and South Carolina, the highest, with 5 cents per gallon.

## NEW Automotive Literature

BLACK & DECKER ELECTRIC TOOLS. In catalog No. 14, which has just been issued for 1927, is described the complete line of portable electric drills and stands and other automotive tools made by the Black & Decker Mfg. Co., Towson, Md. The catalog is notable for the detailed illustrations showing the various tools and the methods of using them.

SILENT MOTORS is the title of a new booklet describing the various installations of Link Belt timing chains on current makes of passenger cars. A large and clear illustration of the installation is shown in each case. This should be of considerable help to service men working on timing chain jobs. A description is given of the various methods of adjusting these chains. The booklet is published by the Link Belt Co., Indianapolis, Ind.

#### Public Invited to Opening

ST. PAUL, April 2.—One hundred thousand responses are expected to an invitation to people of the Northwest from Manager S. A. Stellwagen to attend the first public view of the completed plant in St. Paul of the Ford Motor Co. The dates are April 3-8. In 1926 \$40,000,000 of cars were sold through this plant. Production was increased on March 1 from 135 to 165 cars a day.

#### New Car Titles Some Lower

DETROIT, April 2.—Copyrighted recapitulation figures prepared for the Michigan Automotive Trade Association, for January, show that during that month 7494 new passenger cars were titled in Michigan compared with 8312 during the same month in 1926.

#### Fine California Outlook

HARTFORD, Wis., April 2.—G. A. Kissel, president of the Kissel Motor Car Company, who has returned from a trip to California, says all predictions are for one of the greatest years in California's history. From his own personal observations Mr. Kissel believes that a big year is in store for all those engaged in the automobile industry in that section.

#### \$73,125,000 for Federal Aid

WASHINGTON, April 2.—Federal-aid highway allotments for the fiscal year beginning July 1, 1927, announced here by the U. S. Bureau of Public Roads, totals \$73,125,000. The amount will be allocated to the various states, for use on approved projects within the 185-mile net work of the national highway system. With the state's shares added to this figure the appropriation will provide for the paving of between 6,000 and 8,000 miles of hard-surfaced highways throughout the country.

Texas, allotted \$4,497,272, shares largest under the Federal-aid allotments. Other leading states are: New York, \$3,635,217; Pennsylvania, \$3,335,735; Illinois, \$3,154,429; Ohio, \$2,762,000; Michigan, \$2,214,691, and California \$2,483,000.

#### Named M. M. T. A. Field Man

MINNEAPOLIS, April 4.—The Minnesota Motor Trades Association, 320 Plymouth building, Minneapolis, has appointed Walter Vashro as field man. He was first president of the organization and last year was president of the Associated Automotive Trades of Minneapolis, the Minneapolis unit of the state organization. His principal work will be with the dealers, whether members or not. Each director of the association is to have a definite territory placed under his jurisdiction and in the year Mr. Vashro will have arranged for a district merchandising meeting in each territory to discuss trade problems.

## Sidetrack Compulsory Insurance in Maryland

### "Clincher" Renders Subject Dead Issue for at Least Three Years

BALTIMORE, Md., April 4.—Compulsory automobile insurance in Maryland is a dead issue for at least three years. Efforts to have the Maryland General Assembly enact legislation providing for compulsory insurance has been lost by an overwhelming vote. The bill was rejected in the House of Delegates and in order to prevent further consideration at the present session the "clincher" was put on the measure. This means that during the present session of the General Assembly the House of Delegates will be unable to consider any bill containing the same subject matter. Another compulsory insurance bill is pending in the State Senate and should that body pass it and send it to the House the latter would be barred from considering it.

The subject of compulsory insurance on automobiles has been one of the most important matters before the present session of the General Assembly. An increase in the state tax on gasoline has been one of the few others.

### Jordan Business Increasing

CLEVELAND, O., April 4.—According to Edward S. Jordan, president of the Jordan Motor Car Co., business of the company has been increasing each week since January 31 when the price of the line eight was reduced.

The factory is reported to be building 50 cars a day and this schedule will be increased to 80 early in April when production on the new little custom Jordan gets under way. Jordan reports orders for the new series as well as for the present models in sufficient volume to keep the factory at capacity for the next 90 days.

The regular quarterly preferred dividend of 1½ per cent was declared. It is payable April 1 to stock of record March 28.

### Frederick K. Chaffee Dies

PITTSFIELD, Mass., April 2.—Frederick K. Chaffee, one of the pioneers in the motor industry whose early work dates back to the middle nineties, died March 26 in California. Mr. Chaffee has had the Franklin, Hupmobile and Mack agencies here and was one of the best known motor men in this part of the state.

For over 12 years he had been a victim of inflammatory rheumatism which very greatly incapacitated him in his work.

His interest in the truck industry began with the development of the Alden Sampson truck which he aided in the development of more than 20 years ago.

### Dealer Injured at Race Track

NORTHAMPTON, Mass., April 2.—Frank C. Magranis, Packard and Chrysler dealer, is recovering from injuries sustained at the race track at Daytona Beach, Florida, when both legs were broken when a car skidded and struck him as he was standing on the border of the track with other spectators. He was brought home and placed in a hospital.

### New Federal Branch Manager

DETROIT, April 4.—F. L. Pierce has resigned as sales manager of the branch division of the Federal Motor Truck Co. and has been succeeded by his former assistant, W. W. Smith. Mr. Smith has been with Federal two years and previous to his appointment was vice-president of the Federal Motor Truck Sales Corporation, a position he will continue to hold in addition to his new duties.

The election of R. W. Ruddon as vice-president of the Federal Motor Truck Co., was confirmed at the meeting of the board of directors, at which time he was also made a member of the board. Mr. Ruddon joined Federal in 1914 as personal secretary to R. L. Pulcher, president. He now holds the three titles in the company, vice-president, assistant general manager and assistant secretary.

### Name Chrysler Executive Traffic Club Head



James H. Myler

The Traffic Club of Detroit paid a distinctive honor to James H. Myler, traffic director of the Chrysler Sales Corporation, in Mr. Myler's election as president of the club. He succeeds Arthur T. Waterfall, vice-president of Dodge Brothers. The Detroit Traffic Club is a local organization of high standing, numbers of Detroit's foremost citizens having been listed among its presidents.

## Glancy Optimistic Over Year's Business Outlook

### Thinks Dealers Face Fine Opportunity to Establish Themselves Securely

PONTIAC, Mich., April 4.—A. R. Glancy, president and general manager of the Oakland Motor Car Company returned from an extensive tour through many states with an optimistic feeling toward business prospects in 1927.

"My answer to numerous inquiries as to my opinion on the business outlook for the remainder of the year is to point to the fact that we have invested \$15,000,000 in plant facilities to take care of our increasing production," said Mr. Glancy. "It requires confidence in the future to spend that sum."

"I believe the present year presents a greater opportunity to automobile dealers than any other year in the history of the industry. They may not necessarily sell more cars, but they have the best opportunity ever presented to stabilize their business and to establish themselves securely for the future."

"In this connection, I am preaching to them the doctrine of scientific merchandising. We have had plenty of science in the design and manufacture of automobiles. We still have need for more science in selling them."

"The automobile business has also reached what might be termed the 'service era.' Gradually it is developing the elements of greater courtesy and consideration toward car owners; better equipped service stations; efficient accounting systems and honesty in advertising. For instance, in reference to advertising: while we manufacture six cylinder cars we make them stand upon their own merits instead of boosting them by invidious comparisons with the fours or making derogatory comment upon the eights."

Accompanying Mr. Glancy on his tour of the United States were: W. B. Sawyer, eastern sales manager; E. M. Lubeck, western sales manager; W. M. Chamberlin, director of sales development; W. E. Fellows, director of advertising; R. A. Armstrong, director of service, and Charles Morton, director of dealers' accounting.

### Make Horse-Tractor Survey

WASHINGTON, April 4.—An exhaustive study of comparative costs of using horses, tractors and combines on wheat farms, taking Sherman County, Oregon, as typical of general conditions, has just been completed by the bureau of Agricultural Economics, U. S. Department of Agriculture. Shortage of farm labor and the higher cost of keeping work stock has been a material factor in increased use of the tractor, the survey shows. The results of the study have been printed as Department Bulletin No. 1447.



## Missouri Trade Stops Many Vicious Measures

### Bills Killed Includes One Striking at the Time Payment System

KANSAS CITY, April 2.—The automotive industry in Missouri, faced in the session of the legislature with many vicious bills, has been able to combat these and come through with constructive legislation, says George A. Bond, secretary of the Kansas City Motor Car Dealers Association.

The automotive forces were instrumental in defeating a proposal to add another cent to the state gasoline tax which now is 2 cents a gallon. A bill to license drivers was amended through the efforts of automobile men to cut out many of the objectionable features and reduce the fee from \$1 to 50 cents.

One bill killed was a proposal striking at the time payment plan. Under this bill all motor car concerns in the state would have been compelled to furnish buyers of motor cars, a statement showing the actual cost of the car or truck; the original cost at factory; actual freight charges, commission paid to salesman; overhead costs and net profit. The bill also provided that a motor car or truck sold on time payments would cost the buyer the same as if he paid cash.

A bill limiting the size of trucks that could use the state highways was killed. This bill, Mr. Bond estimates, would have required the "junking" or shipping out of the state trucks valued at more than \$1,000,000. Under its provision no truck could use the highways that was more than 25 feet in length or more than 84 inches in width.

The speed limit for state highways has been increased from 25 to 45 miles per hour during this session of the legislature. This measure was favored by the automobile dealers as it strikes a blow at the "fee seekers" along state highways who make a specialty of arresting tourists and levying exorbitant fines.

### Hoover Sees Safety Progress

WASHINGTON, April 4.—Definite progress is being made toward solution of the problem of street and highway safety, Secretary of Commerce Herbert Hoover told secretaries and managers of motor clubs and associations affiliated with the American Automobile Association at the third annual congress here.

"Our toll of fatalities still continues around 20,000, with accidents around 500,000 a year," Secretary Hoover said. "But the fact that these figures have been held down while the mileage traveled by automobiles and the number of automobiles has greatly increased indicates a hopeful measure of success."

General problems facing the 862 clubs

### Ford Dealer Honored by State Association



John B. Brant

An aggressive Ford dealer at Bushnell, Ill., and an active association worker, John B. Brant was elected second vice-president of the Illinois Automotive Trade Association at its recent annual convention in Danville.

affiliated with the A. A. A. were discussed. During the past year 150,000 new members joined A. A. A. clubs and the year was characterized as the most successful in the history of the body.

Cooperation of automobile dealers and motor clubs was urged by Stanley H. Horner, president of the Washington Automotive Trade Association.

### Morgan Heads Wausau Dealers

WAUSAU, Wis., April 2. — Frank Morgan was elected president of the Wausau (Wis.) Automotive Dealers' Association at the annual meeting. Other officers are: Vice-president, L. H. Hall; secretary and treasurer, Victor Geisel; directors, Frank Schmeling, Fred Schubring, L. H. Thon, August Bohl and James C. Silverthorn. One of the principal activities now being pressed is to solve the used car problem. It was stated that the outlook for new car sales is very good and Wausau dealers expect a large spring trade in the city as well as the many small neighboring communities.

### To Hear Major Woolson

MILWAUKEE, April 4.—The Milwaukee Section of the Society of Automotive Engineers will hold a meeting at the Milwaukee Athletic Club April 6 when an address will be made by Major L. M. Woolson, research engineer, Aviation Division, Packard Motor Car Co., on "Modern Airplane Power Plants." Members of the Milwaukee Society of Mechanical Engineers will be present.

## Used Car Managers in San Antonio Organize

### A "Square-Deal" Policy for Buyers Adopted by New Association

SAN ANTONIO, Tex., April 2.—Merchandising of used automobiles has been put on a higher plane in San Antonio through the organization of used car managers of the various automobile dealers. The organization has been adopted by the San Antonio Automotive Trades Association as the used car managers' auxiliary and its organization has adopted a "square-deal" policy for every used car buyer.

Used car managers in the organization, including men from nearly every San Antonio firm, have agreed that every used car sold shall be put in good condition, assuring the buyer, safe, dependable transportation.

The auxiliary meets the first and third Wednesday of each month in a good fellowship gathering in which problems are threshed out among the members and business helps talked over.

Officers of the group include: President, Charles B. Hanavan, Wroten-Hundley Motor Co.; first vice-president, O. E. Lancaster, Winerich Motor Company; second vice-president, C. E. Harris, Knight-Overland Company; treasurer, R. R. Cole, Yantis Motor Co.; secretary, R. W. Nelson, Wroten-Hundley Company.

### Brisk New Car Trade

SPRINGFIELD, O., April 4.—Automobile dealers are greatly pleased over the brisk trade they are having in the sale of new cars. They say that the moderate priced cars are going well and that quite a number of the high priced cars are in demand.

### N. Carolina Dealers Gather

ASHEVILLE, N. C. April 4.—The summer convention of the North Carolina Automotive Trades Association will be held at Morehead Bluffs, near Morehead City, N. C. This decision was reached by the board of directors at a meeting held here in conjunction with the winter meeting of the association. More than 300 dealers attended the meeting.

At the association meeting J. P. Harris of Charlotte was elected president of the organization for the next year. Henry Cutchin of Rocky Mount was named vice-president and C. W. Roberts was re-elected secretary and treasurer.

Directors, in addition to the officers, are: W. C. Hagood, New Bern; Felix Harvey, Kinston; Sidney McMillan, Wilmington; William Boylan, Raleigh; H. M. Chamblee, Greensboro; B. D. Heath, Charlotte; Hoke Baggs, Winston-Salem, and Harold Yount, Statesville.

## Willys-Overland Branch At Seattle, Wash., Sold

### Transport Motor Co., New Owners, Will Be Given Enlarged Territory

SEATTLE, April 2.—The sale of the Willys-Overland factory branch in this city to the Transport Motor Company, distributors of Willys-Knight and Whippet motor cars in Eastern Washington, Idaho and Montana, consummates one of the biggest automotive deals recently transacted in the Pacific Northwest, and places the Transport Motor Company among the country's larger distributors.

An annual volume of approximately \$2,500,000 is involved in the transaction and the territorial lines of the new organization are enlarged to embrace the entire state of Washington, Idaho, western Montana and Alaska. The present organization of the company in Spokane, Wash., will be maintained to serve that district while Seattle will serve as headquarters for the entire organization.

August Johnson, president and general manager of the Transport Motor Company, has moved his home to Seattle, and will take active charge of the business of the company here. The Spokane branch has been placed under the management of Arnold Reading, long associated with the firm.

The location occupied by the Willys-Overland Pacific Company, including the entire equipment of the branch, has been taken over by the Transport Motor Company.

#### Doty Joins Rochford

CHICAGO, April 2.—Harry E. Doty has been placed in charge of the wholesale department of Rochford Motor Company, Elcar distributors for Northern Illinois. For several years Mr. Doty was sales manager of the White Automobile Company. Following this connection he became branch manager of the Haynes Automobile Company at Chicago, and subsequently general factory sales manager of the Premier Motor Company at Indianapolis.

#### Employees Own Millions in Stock

KENOSHA, Wis. April 2.—Employees of the Nash Motors Company own \$17,000,000 worth of Nash stock, according to information given out at the factory offices. This group of stockholders is said to include practically every foreman in the Nash plants, hundreds at bench work, salaried employees and others. It is pointed out that while at no time has an employee of the company been urged to buy stock Nash executives have been pleased with the thrifty habits of so many employees which has enabled them to make these investments.

April 7, 1927

## Coming Motor Events

### Automobile Shows

Green Bay, Wis. .... Aug. 29-Sept. 2  
Auto Building  
Rocky Mount, N. C. .... April 4-8  
Tobacco Warehouse

### Races

A. A. A.

Altoona, Pa. .... June 11  
Altoona, Pa. .... Sept. 5  
Atlantic City .... May 7  
Atlantic City .... Sept. 24  
Charlotte, N. C. .... July 11  
Detroit .... Sept. 10  
Indianapolis .... May 20  
Los Angeles .... Nov. 27  
Salem, N. H. .... June 25  
Salem, N. H. .... Oct. 12  
Syracuse, N. Y. .... Sept. 2

### Conventions

American Automobile Association,  
Annual Meeting, Ritz-Carlton  
Hotel, Philadelphia .... June 16-17  
Associated Automotive Engine Re-  
builders, Hotel Winton, Cleve-  
land .... May 26-28  
Automotive Equipment Association,  
Summer Convention, Multnomah  
Hotel, Portland, Ore. .... June 27-July 1  
National Association of Automobile  
Show and Association Managers,  
Drake Hotel, Chicago .... July 26-27  
National Automobile Chamber of  
Commerce, Annual Meeting, New  
York .... June 2  
National Highway Traffic Associa-  
tion, Automobile Club of Amer-  
ica, New York .... April 15  
North Carolina Automotive Trade  
Association, Morehead Villa,  
Morehead City, N. C. .... August 15-16  
Texas Automotive Dealers Associa-  
tion, Baker Hotel, Dallas .... April 14-15

S. A. E.

French Lick Spring, Ind., May 25-28—  
Summer Meeting.

### COMING FEATURE ISSUES OF CHILTON CLASS JOURNAL PUBLICATIONS

May 1—Automobile Trade Journal—Annual Big Small Town Market Number  
May 5—Motor Age—Annual Sales and Service Reference Number  
June 4—Automotive Industries—Engineering Number

#### 1927 Road Building Estimate

WASHINGTON, April 2.—A total of 26,841 miles of new highway will be constructed throughout the United States during 1927, in addition to the maintenance of 239,847 miles, now already constructed, according to data compiled from the states by the U. S. Bureau of Public Roads. Of the new construction, 7,489 will be concrete and asphalt, 12,395 will be gravel and macadam and 6,957 will be earth improved.

To carrying out this construction program the states will expend a total of \$648,483,000. Added to this will be the sum of \$475,000,000 expended by counties.

#### Plan Airplane Service

INDIANAPOLIS, April 2.—A group of Marmon Motor Car Company officials is planning a public carrier airplane service between Indianapolis and Detroit for both passengers and express to be started some time during early spring. Hal L. Purdy, vice-president of Marmon, is the leading spirit in the proposed venture and with him are associated President G. M. Williams, Vice-President A. R. Heiskell, Assistant Vice-President A. J. Rogers and J. A. Bohannon, purchasing agent. Present plans call for two planes with capacity for several passengers and baggage, and daily trips will be made. While the new venture will greatly aid the Marmon company and automotive concerns of Indianapolis and Detroit, the benefit it will give to Indianapolis generally is also being considered as a strong point in its favor.

#### Canadian Durant Profits

NEW YORK, April 2.—Durant Motors of Canada reports profit for 1926 as \$234,593, as compared with a deficit in 1925 of \$16,963. Current assets as of Dec. 31, 1926, were \$1,709,940, against \$1,405,153 in 1925, and current liabilities were \$195,210, as against \$315,403, leaving a working capital of \$1,514,730, compared with \$1,189,650.

Cash at the end of 1926 was \$869,793, representing a gain of \$590,722 for the year. Inventory was \$581,697, against \$1,024,185 in 1925.

#### Hupp Expects Sales Record

DETROIT, April 2.—R. S. Cole, general sales manager of the Hupp Motor Car Corporation, predicts that the unusual demand throughout the United States for Hupmobile Sixes and Eights will see all previous sales records of the company surpassed during the next few months. In view of the outlook, he said, Hupp has rearranged its plant facilities permitting an increase of 50 per cent in production.

#### Gardner Runs Day and Night

ST. LOUIS, April 2.—Russell E. Gardner, president of the Gardner Motor Car Company, Inc., reports that a tour through the east divulged an unusually healthy condition regarding stocks of Gardner dealers. The factory here has been working day and night shifts as a result of orders for early shipment. More than a hundred new dealers have been added by this company since the first of the year, it is announced.



## Prices and Weights of Current Passenger Car Models

SHIP

WT. PASS. BODY STYLE. PRICE

AUBURN

-----

3-4-p

Roadster

\$1,095

-----

5-p

Touring

1,145

3040

5-p

Sport Sedan

1,195

3080

5-p

Sedan

1,295

3040

5-p

Wanderer Se'n

1,345

-----

5-p

-----

2-p

Roadster

\$1,395

-----

5-p

Touring

1,445

3350

5-p

Brougham

1,495

3390

5-p

Sedan

1,695

3390

5-p

Wanderer se'n

1,745

(129 in. W. B.)

3180

4-p

Sp. Roadster

\$1,995

3200

5-p

Touring

2,045

-----

7-p

Touring

2,295

3380

5-p

Sport Sedan

2,095

3450

5-p

Sedan

2,195

3450

5-p

Wanderer

2,245

(146 in. W. B.)

4200

7-p

Sedan

\$2,595

BUICK

2990

2-4-p

Roadster

\$1,195

3040

5-p

Touring

1,225

3110

2-4-p

Coupe

1,195

3215

5-p

2d. Sedan

1,195

3190

4-p

Coupe

1,275

3190

2-p

Spec. Coupe

1,275

3300

5-p

4d. Sedan

1,295

3305

5-p

Town Bro'm

1,375

(120 in. W. B.)

3800

4-p

Coupe

\$1,465

3750

5-p

2d. Sedan

1,395

3870

5-p

4d. Sedan

1,495

(128 in. W. B.)

3655

2-4-p

Sp. Roadster

\$1,495

3735

4-p

Sp. Touring

1,525

3905

3-p

Country Club

1,765

3940

5-p

Coupe

1,850

3915

3-5-p

Conv't Coupe

1,925

4050

5-p

Brough. Sedan

1,925

4115

7-p

Sedan

1,995

CADILLAC

"314" Standard Line

(132 in. W. B.)

4170

5-p

Brougham

\$2,995

4105

2-p

Coupe

3,100

4190

5-p

Victoria

3,195

4270

5-p

Sedan

3,260

4460

2-p

Sport Coupe

3,500

4590

5-p

Sport Sedan

3,650

(138 in. W. B.)

4420

7-p

Sedan

\$3,400

4480

7-p

Imperial

3,535

Custom Built

(132 in.)

4220

2-p

Roadster

\$3,350

4300

2-p

Conv't Coupe

3,450

(138 in. W. B.)

4285

7-p

Touring

\$3,450

4275

5-p

Phaeton

3,450

4705

5-p

Sp. Phaeton

3,975

4465

5-p

Coupe

3,855

4465

5-p

Sedan

3,995

4680

7-p

Suburban

4,125

4615

7-p

Imperial

4,350

CASE

J. I. C.

3290

5-p

Touring

\$1,885

3640

5-p

Sedan

2,590

"V"

3950

7-p

Touring

\$2,225

CHANDLER Big Six

3200

2-4-p

Roadster

\$1,695

3330

5-p

Touring

1,545

3345

7-p

Touring

1,645

3570

5-p

20th C'y Sedan

1,495

3570

5-p

Met. Sedan

1,595

3485

4-p

Coupe

1,675

3570

5-p

De Luxe Sedan

1,695

3725

7-p

Sedan

1,895

Standard Six

(108½ in. W. B.)

2475

5-p

Touring

\$ 945

2565

5-p

De Luxe Tour.

1,005

2470

2-4-p

Sport. R'dster

1,135

2685

5-p

Sedan

995

2620

2-p

Coupe

1,035

2685

5-p

De Luxe Sedan

1,095

2620

2-p

De Luxe Coupe

1,125

Special Six

(115 in. W. B.)

2390

5-p

Touring

\$1,145

2040

5-p

Sport Touring

1,295

2995

2-p

Coupe

1,195

2995

2-p

De Luxe Coupe

1,285

3380

5-p

Sedan

1,295

"Royal Str. S"

-----

7-p

Touring

\$2,195

-----

4-p

Roadster

2,195

-----

4-p

Coupe

2,195

3760

5-p

Sedan

2,195

3870

7-p

Sedan

2,295

SHIP

WT. PASS. BODY STYLE. PRICE

CHEVROLET "AA"

1890

2-p

Roadster

\$ 525

1965

5-p

Touring

525

2090

2-p

Utility Coupe

625

2190

5-p

Coach

595

2275

5-p

Sedan

695

2135

2-4-p

Cabriolet

715

2270

5-p

Landau Sedan

745

CHRYSLER

2145

5-p

Touring

\$ 750

2025

2-p

Roadster

750

2130

2-4-p

Roadster

795

2230

2-p

Coupe

750

2335

5-p

Coach

780

2410

5-p

Sedan

830

2350

5-p

Landau Sedan

885

2570

5-p

Touring

\$1,075

2545

2-p

Roadster

1,145

2615

2-4-p

Roadster

1,175

2690

2-p

Coupe

1,125

2685

3-5-p

Coupe

1,245

2795

5-p

Coach

1,145

2835

5-p

Sedan

1,245

(185½ in.)\*

3765

5-p

Phaeton

\$2,495

3805

2-4-p

Roadster

2,595

4110

5-p

Coupe

3,095

-----

5-p

Sedan

2,675

4055

5-p

Sedan

3,095

(192½ in.)\*

4090

4-p

Coupe

\$2,895

4025

2-p

Cabriolet

3,495

(198½ in.)\*

-----

5-p

Sportif

\$3,995

4195

7-p

Sedan

3,295

4370

7-p

Sedan Lim.

3,595

4432

5-p

Town Car

5,495

\$Cloth Upholstery. Leather at extra cost.

"Overall length."

CUNNINGHAM

4500

4-p

Sp. Touring

\$6,150

4600

7-p

Touring

6,650

4700

4-p

Coupe

7,600

5000

5-p

Limousine

8,100

DAGMAR

3750

4-p

Roadster

\$3,500

3800

4-p

Sp. Tourer

3,500

3700

4-p

Phaeton

3,500

4200

4-p

Petite Coupe

4,500

4200

4-p

Petite Sedan

4,500

4500

4-p

De Luxe Coupe

4,750

4700

5-p

Sedan

4,700

4800

7-p

Sedan

4,750

3150

5-p

Touring

\$1,785

3100

2-p

Roadster

1,985

3200

4-p

Sp. Touring

1,985

3500

5-p

Sedan

2,445

DAVIS

2915

5-p

Legion. Tour.

\$1,395

3000

5-p

Sedan

1,595

3055

5-p

Imperial Sedan

1,795

"92-27"

2350

5-p

Roadster

\$1,245

2500

5-p

Touring

1,285

2670

5-p

Sedan

1,285

2375

3-p

Coupe

1,285

2575

5-p

Imp. Sedan

1,885

"94-27"

3050

5-p

Touring

\$1,795

3000

4-p

Polo Roadster

1,795

3150

4-p

Princess Coupe

1,885

3200

5-p

Emperor Sedan

1,885

DIANA "St. S"

2995

5-p

Roadster

\$1,795

2995

5-p

Palm Bch. Rds.

1,995

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7-p

Touring

1,995

3170

5-p

DeL. Bro'm

1,995

3275

5-p

De Luxe Sedan

2,195

3160

5-p

Cabriolet

2,095

3640

7-p

Sedan (135 in. W. B.)

2,695

3640

7-p

Berline Sedan

2,895

3640

5-p

Town Car

5,000

DODGE BROTHERS

2448

2-p

Roadster

\$ 795

2541

2-p

Spec'l Roadster

845

2574

5-p

Touring

795

2669

5-p

Spec. Touring

845

2622

2-4-p

Sport Roadster

975

2598

2-p

Coupe

845

2668

2-p

Spec. Coupe

895

2811

5-p

Sedan

895

2893

5-p

Spec. Sedan

945

2937

5-p

DeL. Sedan

1,075

SHIP

WT. PASS. BODY STYLE. PRICE

DU PONT

3700

4-p

Roadster

\$2,800

3850

5-p

Touring

2,800

3850

4-p

Coupe

3,200

4100

5-p

Sedan

3,400

4100

5-p

Conv't. Sedan

3,750

ELCAR

2580

4-p

Lan. Rdster

\$1,475

2670

5-p

Brougham

1,295

2750

5-p

Sedan

1,395

"8-82"

3320

2-4-p

Land. R'dster

\$1,870

3410

5-p

Brougham

1,595

3490

5-p

Sedan

1,790

"8-90"

3675

7-p

Touring

\$2,265

3620

2-4-p

Land. R'dster

2,295

-----

2-4-p

Roadster

2,315

3710

5-p

Brougham

2,195

3895

5-p

Sedan

2,465

4245

7-p

Sedan

2,765

ERSKINE

2300

5-p

Tourer

\$ 945

-----

2-p

Coupe

945

2400

5-p

Sedan

995

-----

2-4-p

Cust. Coupe

995

ESSEX

"Super Six"

-----

4-p

Speedster

\$ 785

-----

2-p

Speedster

700

2450

5-p

Coach

735

2340

2-p

Coupe

735

2530

5-p

Sedan 4d.

795

FALCON KNIGHT

-----

-----

Roadster

-----

-----

-----

Touring

-----

-----

-----

Coupe

-----

-----

-----

Landau

-----

-----

5-p

Brougham

\$ 995

-----

5-p

Sedan

1,095

FLINT

"Z-18"

2450

5-p

Coach

\$ 795

2580

5-p

DeL. Coach

895

"60"

2750

5-p

Touring

\$1,250

2885

4-p

Sp. Roadster

1,350

2890

4-p

Coupe Rdster

1,395

3030

5-p

Sepan 4d.

1,395

3010

5-p

Brougham

1,395

(120 in. W. B.)

3245

5-p

Touring

\$1,450

3395

4-p

Sp. Touring

1,595

3500

4-p

Coupe

1,795

3625

5-p

Sedan

1,850

(130 in. W. B.)

3470

7-p

Sedan

\$1,595

3780

7-p

Sedan

2,050

FORD

"T"

1655

2-p

Runabout

\$ 360

1728

5-p

Touring

380

1860

2-p

Coupe

485

1972

5-p

Tudor Sedan

495

2024

5-p

Fordor Sedan

545

FRANKLIN

"11-B"

3015

3-p

Sport. Road.

\$2,690

2975

5-p

Touring

2,635

3105

3-p

Coupe

2,490

3150

3-5-p

Coupe

2,565

3230

5-p

Sedan

2,790

3165

4-p

Victoria

2,740

3230

5-7-p

Sedan

2,840

3230

5-p

Oxford Sedan

2,815

3305

4-p

Sp. Sedan

2,910

3360

7-p

Limousine

2,990

-----

-----

Collap. Coupe

2,925

-----

-----

Tandem Sport

3,150

GARDNER

"80"

2900

4-p

Roadster

\$1,395

2900

4-p

Roadster DeL.

1,495

3370

5-p

Sedan

1,695

3370

5-p

Sedan DeL.

1,795

"90"

3450

4-p

Roadster

\$1,995

3475

4-p

Landau Rdster.

2,295

3690

5-p

Brougham

2,295

3730

5-p

Sedan

2,295

3690

5-p

Victoria

2,295

HUDSON "Std. Line"

3505

5-p

Coach

\$1,285

3620

5-p

Sedan

1,385

"Custombuilt"

-----

7-p

Phaeton

\$1,600

3660

4-p

Brougham

1,675

3870

7-p

Sedan

1,850

3755

5-p

Sedan

1,750

HUPMOBILE

"A-1"

2620

5-p

Touring

\$1,325

2660

2-4-p

Roadster

1,385

2800

5-p

Sedan

1,385

2800

2-4-p

Coupe

1,385

2890

5-p

Brougham

1,385

SHIP

WT. PASS. BODY STYLE. PRICE

"E-3"

3300

5-p

Touring

\$1,945

3360

7-p

Touring

2,045

3365

2-4-p

Roadster

2,045

3465

2-4-p

Coupe

2,345

3515

5-p

Brougham

2,345

3545

5-p

Sedan

2,345

3525

5-p

Victoria

2,345

3360

7-p

Sedan

2,495

3360

7-p

Sedan Lim.

2,595

JORDAN

"R"

-----

4-p

Sport Salon

\$1,595

-----

2-4-p

Tomboy

1,595

-----

5-p

Sedan

1,595

"J-1"

2915

4-p

Playboy Road.

\$1,545

3070

2-4-p

Sport Coupe

1,695

3200

4-p

Cus. Victoria

1,695

3200

5-p

Cus. Sedan

1,695

Series "AA"

3470

5-p

Cus. Sedan

\$2,495

3470

4-p

Cus. Victoria

2,495

KISSEL

"6-55"

(124 in. W. B.)

3020

5-p

Phaeton

\$1,685

3160

4-p

Speedster

1,895

-----

4-p

Coupe R'dster

1,895

3300

5-p

Brougham

1,695

-----

5-p

Spec. Bro'm

1,795

3440

5-p

Bro'm Sedan

1,895

-----

5-p

Conv't Bro'm

2,295

(131 in. W. B.)

3660

7-p

Touring

\$1,785

3225

4-p

Tourster

1,895

-----

5-p

Spec. Bro'm

2,095

-----

7-p

Sedan

2,295

"8-65"

(125 in. W. B.)

-----

5-p

Phaeton

\$1,885

-----

4-p

Speedster

2,095

-----

4-p

Coupe R'dster

2,095

-----

5-p

Brougham

1,895

-----

5-p

Spec. Bro'm

1,995

-----

5-p

Bro'm Sedan

2,095

-----

5-p

Conv't Bro'm

2,495

(132 in. W. B.)

-----

7-p

Touring

\$1,985

-----

4-p

Tourster

2,095

-----

5-p

Spec. Bro'm

2,295

-----

7-p

Sedan

2,495

"8-75"

(131 in. W. B.)

3220

5-p

Phaeton

\$2,185

3360

4-p

Speedster

2,395

-----

4-p

Coupe R'ater

2,395

3565

5-p

Brougham

2,195

-----

5-p

Spec. Bro'm

2,295

3760

5-p

Bro'm Sedan

2,395

-----

5-p

Conv't Bro'm

2,795

-----

7-p

Sedan

2,795

(139 in. W. B.)

<

# Prices and Weights of Current Passenger Car Models

SHIP WT. PASS. BODY STYLE. PRICE				SHIP WT. PASS. BODY STYLE. PRICE				SHIP WT. PASS. BODY STYLE. PRICE				SHIP WT. PASS. BODY STYLE. PRICE			
<b>LOCOMOBILE—Continued</b>				<b>OAKLAND "6"</b>				<b>"6-90"</b>				<b>STEARNS-KNIGHT "F 6-85"</b>			
<b>"48"</b>				<b>"30E"</b>				<b>(133½ in. W. B.)</b>				<b>"G-8"</b>			
5030	4-p	Sportif	\$7,460	2500	5-p	Touring	\$1,025	3850	2-4-p	Roadster	\$2,995	4185	2-p	Roadster	\$3,250
5330	7-p	Touring	7,460	2590	4-p	Sp. Roadster	1,175	4125	5-p	Sedan	3,495	4285	4-p	Touring	3,250
5640	7-p	Touring Lim.	9,500	2620	5-p	Sp. Phaeton	1,095	4200	7-p	Sedan	3,595	4640	2-p	Cab-Roadster	3,350
5600	5-p	Victoria Sed.	10,050	2745	5-p	2d. Sedan	1,095	4275	5-p	Ber. Limousine	3,795	4407	4-p	Coupe	3,350
5464	6-p	Brougham	10,040	2705	3-p	Landau Coupe	1,125	4050	5-p	Sedan	2,995	4515	5-p	Std. Sedan	3,350
5868	7-p	Enc. Dr. Lim.	10,050	2855	5-p	4d. Sedan	1,195					4640	7-p	Sedan	3,550
5624	7-p	Cabriolet	10,300	2885	5-p	Landau Sedan	1,295					4650	5-p	Std. Sedan Lim.	3,550
<b>McFARLAN "TV"</b>				<b>OVERLAND "(4) Whippet"</b>				<b>"80"</b>				<b>STUDEBAKER Standard Six</b>			
4000	2-p	Roadster	\$5,400	1985	5-p	Touring	\$ 625	3285	2-p	Runabout	\$2,895	2965	3-p	Du. Roadster	\$1,160
4600	4-p	Sp. Touring	5,600	1930	2-4-p	Roadster	695	3300	4-p	Phaeton	3,095	3030	3-p	Sport Roadster	1,195
4900	4-p	Coupe	6,720	2025	2-p	Coupe	625	3440	7-p	Phaeton	2,895	3095	5-p	Du. Phaeton	1,180
5200	4-p	Tour. Sedan	6,720	2075	5-p	Coach	625	3470	5-p	Coach 2d.	2,995	3140	3-p	Country Club	1,295
6200	7-p	Tour. Sedan	6,810	2185	5-p	Sedan	725	3405	2-p	Coupe	3,100	3210	5-p	Coach	1,230
.....	6-p	Sedan	6,720	2230	5-p	Landau	755	3525	5-p	Coach 4d.	3,250	3115	5-p	Sedan	1,330
.....	7-p	Sedan	6,810	2270	5-p	Touring	\$ 765	3565	5-p	Club Sedan	3,300	3235	5-p	Custom Sedan	1,335
.....	7-p	Spec. Sedan	6,810	2225	2-4-p	Roadster	825	3620	7-p	Coach	3,350	3180	4-p	Cus. Victoria	1,325
.....	7-p	Enc. Sedan	7,110	2305	2-p	Coupe	795	3680	7-p	Lim. Coach	3,450	<b>Special Six</b>			
.....	7-p	Sub. Sedan	7,110	2405	5-p	Coach	795	3420	4-p	Coupe	3,695	3480	2-4-p	Sp. Roadster	\$1,630
5200	7-p	Town Car	9,000	2440	5-p	Sedan	875	3500	5-p	Sedan	3,895	3495	5-p	Du. Phaeton	1,480
<b>"Straight 8"</b>				2490	5-p	Landau	925	3600	7-p	Sedan	3,995	3470	5-p	Coach	1,480
3400	2-p	Roadster	\$2,650	<b>PACKARD "6"</b>				3660	7-p	Enc. Dr. Lim.	4,045	3620	5-p	Brougham	1,830
3400	5-p	Touring	2,650	3545	4-p	Roadster	\$2,350	<b>"36"</b>				<b>Big Six (120 in. W. B.)</b>			
3450	7-p	Touring	2,750	3590	5-p	Phaeton	2,250	4510	4-p	Touring	\$5,875	3445	3-p	Du. Roadster	\$1,530
3400	4-p	Roadster	3,050	3925	5-p	Sedan	2,250	4585	7-p	Touring	5,875	3485	2-4-p	Sport Roadster	1,495
3650	5-p	Sedan	3,180	<b>(133 in. W. B.)</b>				4760	3-p	Coupe	6,375	3580	5-p	Sport Phaeton	1,445
3650	6-p	Sub. Sedan	3,380	3790	7-p	Touring	\$2,785	4830	4-p	Sedan	6,375	3510	5-p	Club Coupe	1,480
3700	7-p	Sedan	3,280	3925	4-p	Coupe	2,685	4815	7-p	Sedan	5,875	3705	4-p	Cus. Victoria	1,645
3700	7-p	Sub. Sedan	3,480	4070	7-p	Sedan	2,785	4795	4-p	Coupe Sedan	6,375	3835	5-p	Custom-Bro'm	1,585
3650	5-p	Broug. Coach	3,180	4015	5-p	Club Sedan	2,725	4870	7-p	Enclosed Lim.	5,875	<b>(127 in. W. B.)</b>			
3750	5-p	Town Car	4,600	4130	7-p	Sedan Lim.	2,885	4740	7-p	French Lim.	7,500	3720	7-p	Du. Phaeton	\$1,810
<b>MARMON "Little Marmon"</b>				<b>"8"</b>				4840	7-p	Sedan Landau	6,000	3910	5-p	Brougham 4d.	2,130
3019	2-p	Speedster	\$1,895	<b>(136 in. W. B.)</b>				4880	4-p	Lim. Encl.	6,375	4050	7-p	The President	2,245
2977	4-p	Speedster	1,965	4110	4-p	Runabout	\$3,850	4805	4-p	Sedan	6,475	<b>STUTZ "AA" (131 in. W. B.)</b>			
3054	2-p	Coupe Rdster	1,995	4130	5-p	Phaeton	3,750	4745	2-p	Coupe	6,600	4058	2-4-p	Speedster	\$3,150
3053	2-p	Coupe	1,895	4475	4-p	Coupe	4,750	4800	4-p	Sedan Landau	6,600	4175	4-p	Speedster	3,160
3039	4-p	Sedan 2d.	1,795	4430	5-p	Sedan	4,750	4880	4-p	Encl. Landau	6,600	4334	5-p	Brougham	3,195
3092	4-p	Sedan 4d.	1,395	<b>(143 in. W. B.)</b>				4865	7-p	French Landau	8,000	4340	5-p	Sedan	3,195
3119	5-p	Cus. Sedan 2W	2,595	4250	7-p	Touring	\$3,950	<b>PONTIAC "Six"</b>				4176	4-p	Vic. Coupe	3,175
3172	5-p	Cus. Sedan 3W	2,595	4550	5-p	Club Sedan	4,890	2160	2-4-p	Roadster	\$ 775	4182	2-4-p	Coupe	3,165
3116	4-p	Cus. Victoria	2,595	4660	7-p	Sedan	5,000	2270	2-p	Coupe	775	.....	5-p	Landau Sed.	3,345
3040	4-p	Cus. Town Cab	3,125	4700	7-p	Sedan Lim.	5,100	2375	5-p	2d. Sedan	775	<b>(145 in. W. B.)</b>			
<b>"E-75"</b>				<b>PAIGE "6-45"</b>				2345	4-p	Sport Cab.	835	4566	5-p	Tour. Bro'm	\$3,685
4251	2-p	Speedster	\$3,485	2660	5-p	Touring	\$1,095	2455	5-p	Landau Sedan	895	4656	7-p	Sedan	3,685
4256	4-p	Speedster	3,485	2615	4-p	Cab R'dster	1,295	2510	5-p	DeL. Lan. Sed.	975	4731	7-p	Sedan Lim.	3,785
4017	5-p	Phaeton	3,485	2525	2-p	Coupe	1,095	<b>REO "A"</b>				<b>"AA De Luxe" (131 in. W. B.)</b>			
4480	7-p	Tour. Speedster	3,565	2760	5-p	Sedan	1,195	.....	2-p	Roadster	\$1,685	.....	2-p	DeL. Speed'r	\$3,250
4374	2-p	Coupe R'dster	3,565	<b>"6-75"</b>				.....	2-p	Brougham	1,695	.....	4-p	DeL. Speed'r	3,260
4452	5-p	Town Coupe	3,195	<b>(125 in. W. B.)</b>				3700	4-p	Sedan	1,845	.....	2-p	Coupe	3,265
4373	2-p	Coupe	3,485	3420	7-p	Touring	\$1,655	.....	4-p	Victoria	1,845	.....	4-p	Vic. Coupe	3,275
4346	4-p	Victoria	3,485	3540	4-p	Cab Roadster	1,995	.....	4-p	DeL. Sedan	1,995	.....	5-p	Brougham	3,320
4525	5-p	Brougham	3,565	3550	5-p	Sedan	1,695	<b>RICKENBACKER "6-70"</b>				.....	5-p	Sedan	3,320
4498	5-p	Sedan	3,565	3550	4-p	Coupe	1,995	3125	5-p	Sedan	\$1,595	.....	5-p	Landau Sed.	3,470
4620	7-p	Sedan	3,640	3765	7-p	Sedan	1,995	3055	.....	Bro'm Vict.	1,645	<b>(145 in. W. B.)</b>			
4515	5-p	Custom Sedan	3,960	3805	7-p	Limousine	2,145	.....	5-p	Sedan	\$1,795	.....	5-p	Tour. Bro'm	\$3,835
4678	7-p	Custom Sedan	4,075	<b>"6-85"</b>				3170	.....	Bro'm Vict.	1,845	.....	7-p	Sedan	3,835
4718	7-p	Custom Lim.	4,175	<b>(115 in. W. B.)</b>				.....	7-p	Berline	2,795	.....	7-p	Sed. Lim.	3,910
<b>MOON "6-60"</b>				3055	4-p	Roadster	\$1,495	<b>"8-80"</b>				<b>"AA Custom"</b>			
2295	3-p	Roadster	\$ 995	3215	5-p	Brougham	1,395	3240	5-p	Sedan	\$1,795	.....	2-p	Coupe	\$3,915
2330	3-5-p	DeL. Roadster	1,095	3115	5-p	Landau Bro'm	1,395	3170	.....	Bro'm Vict.	1,845	.....	4-p	Vic. Coupe	3,925
2340	5-p	Phaeton	995	3280	5-p	Sedan	1,495	.....	5-p	Sedan	\$2,595	.....	5-p	Sedan	3,995
2420	5-p	Coach	1,045	<b>"8-85"</b>				.....	7-p	Sedan	2,695	4090	2-4-p	Cab. Coupe	3,995
2520	5-p	Std. Brough.	1,145	3570	7-p	Touring	\$2,295	<b>ROAMER "8-78"</b>				<b>VELIE "Spec. 60" (145 in. W. B.)</b>			
2575	3-5-p	Cab. Roadster	1,195	3700	5-p	Sedan	2,355	.....	4-p	Coupe	.....	3025	5-p	Club. Phaeton	\$1,450
2520	5-p	Royal Bro'm	1,195	3910	7-p	Sedan	2,655	.....	5-p	Brougham	.....	3335	4-p	Coupe	1,585
2605	5-p	4d. Sedan	1,245	3690	4-p	Cab Rdster.	2,655	.....	5-p	Sedan	.....	3175	5-p	Spec. Sedan	1,585
2605	5-p	Royal Sedan	1,295	3700	4-p	Coupe	2,655	3410	2-p	Coupe	\$1,985	3350	5-p	Royal Sedan	1,635
<b>Series "A"</b>				3950	7-p	Limousine	2,795	3440	5-p	Brougham	1,985	<b>"Std. 50" (112 in. W. B.)</b>			
2600	5-p	Roadster	\$1,395	<b>PEERLESS "6-60"</b>				3570	5-p	Sedan	1,985	2730	3-p	Coupe	\$1,165
2560	5-p	Touring	1,195	.....	5-p	Sedan	\$1,345	.....	5-p	Sedan	2,935	2810	5-p	Sedan	1,165
2720	5-p	Cab. Roadster	1,595	<b>(126½ in. W. B.)</b>				3650	5-p	Tourer	\$2,495	<b>WILLS SAINT-CLAIRE "T-6" (127 in. W. B.)</b>			
2710	5-p	DeL. Bro'm	1,395	3625	5-p	Coupe	\$2,295	3880	5-p	Sedan	2,985	3675	5-p	Traveler	\$2,700
2860	5-p	DeL. Sedan 4d.	1,645	3680	5-p	Sedan	2,395	3980	7-p	Sedan	3,235	3580	4-p	Roadster	2,700
<b>NASH "Light Six"</b>				<b>(133½ in. W. B.)</b>				<b>ROLLS-ROYCE</b>				3750	4-p	Cab. Coupe	3,350
2275	5-p	Touring	\$ 865	3475	2-4-p	Sp. Roadster	\$2,195	Manufacturers do not quote list prices.				3970	5-p	Std. Sedan	3,150
2310	2-p	Coupe	925	3400	7-p	Phaeton	1,995	<b>STAR "4"</b>				3970	7-p	Sedan	3,250
2440	5-p	Sedan	925	3800	7-p	Sedan	2,595	1850	2-p	Conv't R'dster	\$ 550	4030	7-p	Limousine	3,350
2475	5-p	Sedan	995	3825	7-p	Limousine	2,695	1905	5-p	Touring	550	<b>WILLIS-KNIGHT "66-A"</b>			
.....	6-p	De Luxe Sedan	1,085	3575	5-p	DeLuxe Sedan	2,795	1965	2-p	Coupe	650	.....	2-p	Roadster	\$1,950
<b>"Special Six"</b>				3650	7-p	DeLuxe Sedan	2,995	2120	5-p	Coach	675	.....	5-p	Touring	1,550
2900	2-p	Roadster	\$1,115	<b>"6-80"</b>				2190	5-p	Sedan 4d.	765	.....	2-4-p	Cab. Coupe	2,295
2980	5-p	Touring	1,135	2950	5-p	Phaeton	\$1,395	2075	5-p	Touring	\$ 725	.....	4-p	Foursome Sed.	2,295
2980	4-p	Roadster	1,225	3025	2-4-p	Roadster	1,495	2160	2-4-p	Sp. Roadster	885	2900	5-p	Touring	\$1,295
.....	2-p	Cabriolet	1,290	3120	2-4-p	Coupe	1,565	2100	2-p	Coupe	795	2965	2-4-p	Roadster	1,350
3150	5-p	Sedan 2d.	1,215	3100	5-p	Sedan 2d.	1,395	2245	5-p	Coach	845	2815	2-p	Coupe	1,295
3170	5-p	Sedan	1,315	3290	5-p	Std. Sedan	1,595	2355	5-p	Sedan	925	2880	2-4-p	Cab Coupe	1,395
3250	5-p	Spec. Sedan	1,485	.....	.....	Sport Sedan	1,795								



*This list comprises cars distributed on a national basis*

**Zen-Zenith**  
(Continued on page 42)

**T**HE general belief of automobile engineers—amounting in many instances to a definite conviction—that Lockheed Hydraulics are the eventual solution of all their braking problems, is resulting in additional important Lockheed adoptions as the public demand for a higher standard of braking efficiency makes itself felt.

Lockheed Hydraulics are now standard equipment for more than half of the various motor cars manufactured in America, and they are achieving the same dominance among cars of European manufacture.

# LOCKHEED HYDRAULIC

*Four* **BRAKES** *Wheel*

HYDRAULIC BRAKE COMPANY,  
Detroit, Mich., U. S. A.





# Mechanical Specifications of Current Passenger Car Models—Continued (From page 40)

ENGINE										ELECTRICAL SYSTEM										REAR AXLE		BRAKES		Steering Gear—Make		Rear Springs—Type and Length		Chassis and Make		ABBREVIATIONS—NAMES OF MFRS OF STOCK PARTS		
Wheel Base (Inches)	Tire Size	Deck/Belt/Bolts	Model	Number of Cyls	Rated H.P.	Piston Dia.	Valve Arrangement	Crankshaft Drive	Piston Material	No. Main Bear.	Dampers Vibration	Oil System	Cooling System	Thermostat	Radiators	Shutters	Carburetor	Air Cleaner?	Ignition System	Generator and Starter Make	Clutch—Type and Make	Gear Set—Make	Universal—Type and Make	Type and Make	Gear Ratio	Foot—Type and Hand—Type	Wheel Type	4 Wheel Type	Length	Chassis Lubrication—Type and Make		
124	32x5.77	Own.....8-P	Lye Spe.....8-80	8-3/4x4 1/4	25.3	199	I	Ch. Al.	5	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.70	I-F	I-R	Se	War	Pr-Ze	A-K—Atwater Kent
130	32x6.00	Own.....8-3/4x4 1/4	Lye Spe.....8-80	8-3/4x4 1/4	33.8	299	T	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	A-L—Auto-Lite
142	32x6.75	Own.....48	Own.....8-3/4x4 1/4	8-3/4x4 1/4	48.6	525	T	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
138	32x6.75	Own.....60	Own.....8-3/4x4 1/4	8-3/4x4 1/4	36.0	372	T	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
116	29x5.25	Own.....E-75	Own.....E-75	8-3/4x4 1/4	24.2	190	I	Ch. Al.	5	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
136	32x6.00	Own.....E-75	Own.....E-75	8-3/4x4 1/4	31.8	240	I	Ch. Al.	5	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
131	32x6.00	Own.....TV	Own.....E-75	8-3/4x4 1/4	33.8	299	T	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
141 1/4	32x6.00	Own.....TV	Own.....E-75	8-3/4x4 1/4	48.6	525	T	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
113	30x5.25	Own.....Series A	Own.....E-75	8-3/4x4 1/4	23.4	186	T	Ch. Al.	4	N	N	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
110	30x4.75	Own.....Con.	Own.....26L	8-3/4x4 1/4	21.6	170	T	Ch. Al.	4	N	N	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
108	30x4.75	Own.....Nash	Own.....26L	8-3/4x4 1/4	21.6	170	T	Ch. Al.	4	N	N	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
121-127	30x4.75	Own.....Nash	Own.....26L	8-3/4x4 1/4	21.6	170	T	Ch. Al.	4	N	N	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
112 1/2	31x5.25	Own.....Special	Own.....231	8-3/4x4 1/4	25.3	224	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
113 1/2	30x5.25	Own.....OS	Own.....OS	8-3/4x4 1/4	19.8	186	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
110 1/4	30x5.25	Own.....30E	Own.....30E	8-3/4x4 1/4	19.8	186	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
109 1/2	28x4.75	Own.....96	Own.....96	8-3/4x4 1/4	15.6	134	I	Ch. Al.	3	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
120-133	32x6.00	Own.....8-3/4x4 1/4	Own.....8-3/4x4 1/4	8-3/4x4 1/4	39.8	288	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
130-143	32x6.00	Own.....8-3/4x4 1/4	Own.....8-3/4x4 1/4	8-3/4x4 1/4	29.4	289	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
8	32x6.00	Own.....8-3/4x4 1/4	Own.....8-3/4x4 1/4	8-3/4x4 1/4	29.4	289	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-45	32x6.00	Own.....Spec.	Own.....Spec.	8-3/4x4 1/4	27.3	240	I	Ch. Al.	4	N	N	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-75	32x6.00	Own.....75	Own.....75	8-3/4x4 1/4	27.3	240	I	Ch. Al.	4	N	N	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-85	32x6.00	Own.....Spec.	Own.....Spec.	8-3/4x4 1/4	27.3	240	I	Ch. Al.	4	N	N	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-90	32x6.00	Own.....Spec.	Own.....Spec.	8-3/4x4 1/4	27.3	240	I	Ch. Al.	4	N	N	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-100	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-110	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-120	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-130	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-140	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-150	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-160	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-170	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-180	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-190	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-200	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-210	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-220	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-230	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-240	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-250	32x6.00	Own.....8U	Own.....8U	8-3/4x4 1/4	25.3	199	I	Ch. Al.	7	Y	Y	Pu.	Y	N	N	Str.	Y	Y	Delo.	Delo.	Delo.	Delo.	War	m-U.M.	Pr-Ze	4.81	I-F	I-R	Se	War	Pr-Ze	Al—Alumina
6-260	32x6.00	Own.....8U	Own.....8U																													

**S**ERVICE stations, garages and shops that use U. S. Electrical Tools are, as a rule, successful, not because of U. S. Tools alone, but because the owners have the knack of knowing how to make the right decisions. They don't guess.



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*Oldest Builders of Electric Drills and Grinders in the World*  
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450 R.P.M. under full load. Chrome nickel steel gears running in grease—1-piece frame and commutator head—3-jaw screw back chuck—3 heavy duty SKF Ball Bearings, etc.



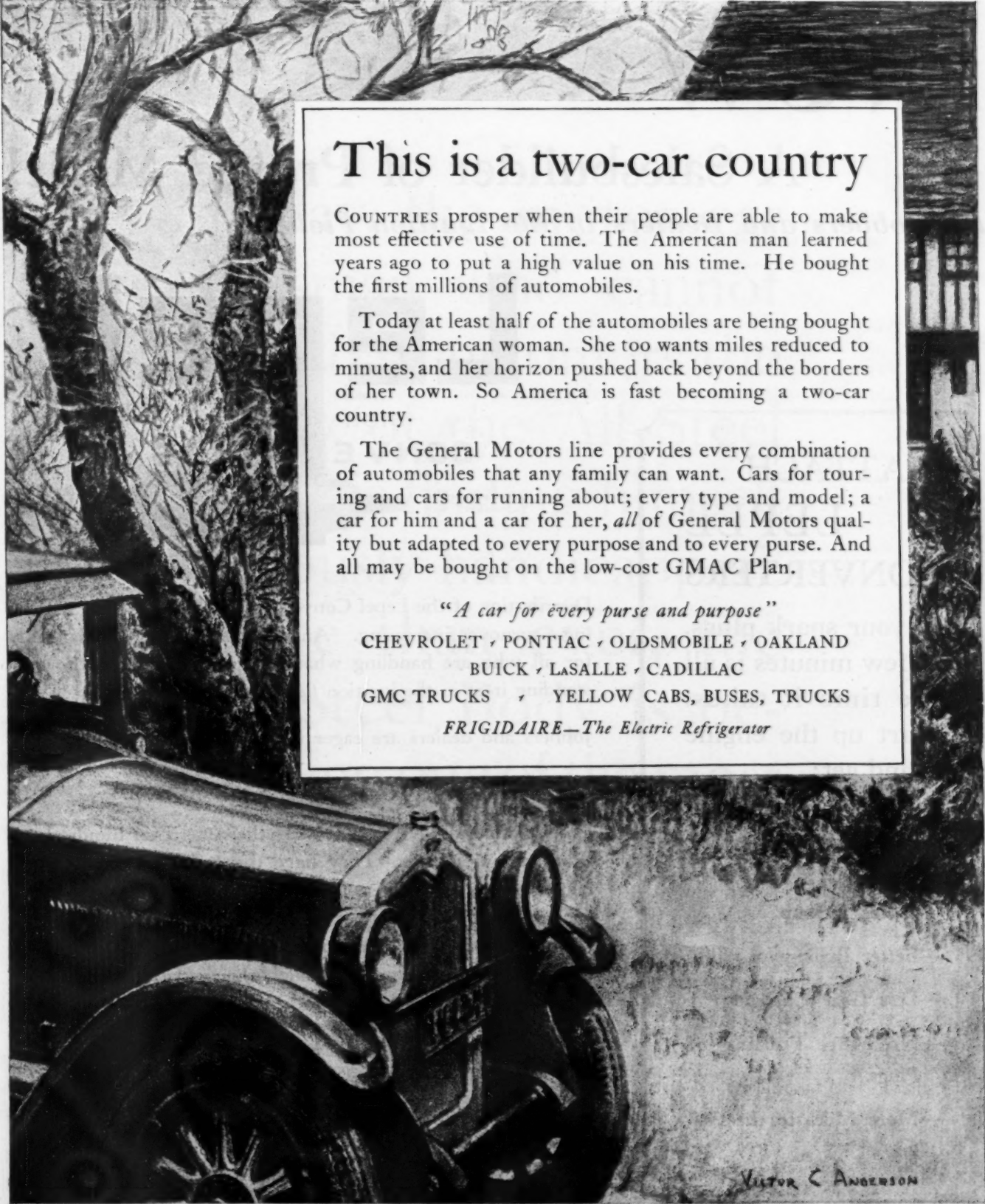
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COUNTRIES prosper when their people are able to make most effective use of time. The American man learned years ago to put a high value on his time. He bought the first millions of automobiles.

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HIGH FREQUENCY  
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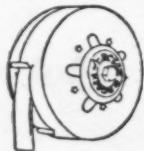
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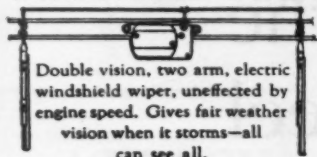
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Correct control  
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Double vision, two arm, electric  
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Gas-tight, heat resisting  
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Automatic, dependable  
Bosch ignition adds new  
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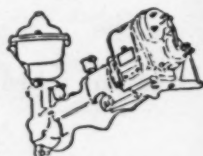
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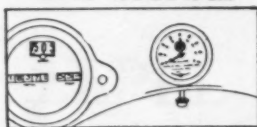
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trucks. Gives Bosch  
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Saves in oper-  
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Saves its cost  
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### BOSCH AUTOMATIC GAS SIGNAL



Entirely electrical in operation  
Accurately records gasoline in  
tank and automatically flashes  
warning before tank is empty

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Your customers want the safety that a  
Bosch Traffic-Tuned Horn will bring  
them. They gladly pay the price for  
a distinctive warning horn which is  
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The Bosch Traffic-Tuned Horn is  
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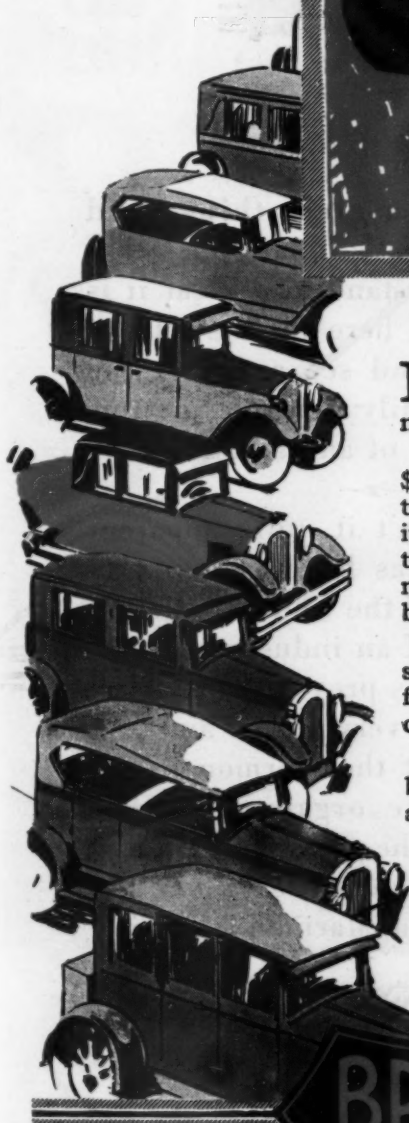
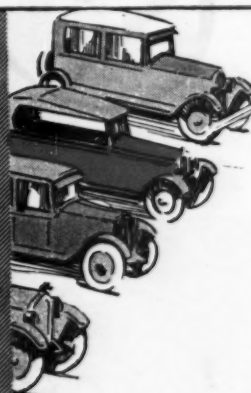
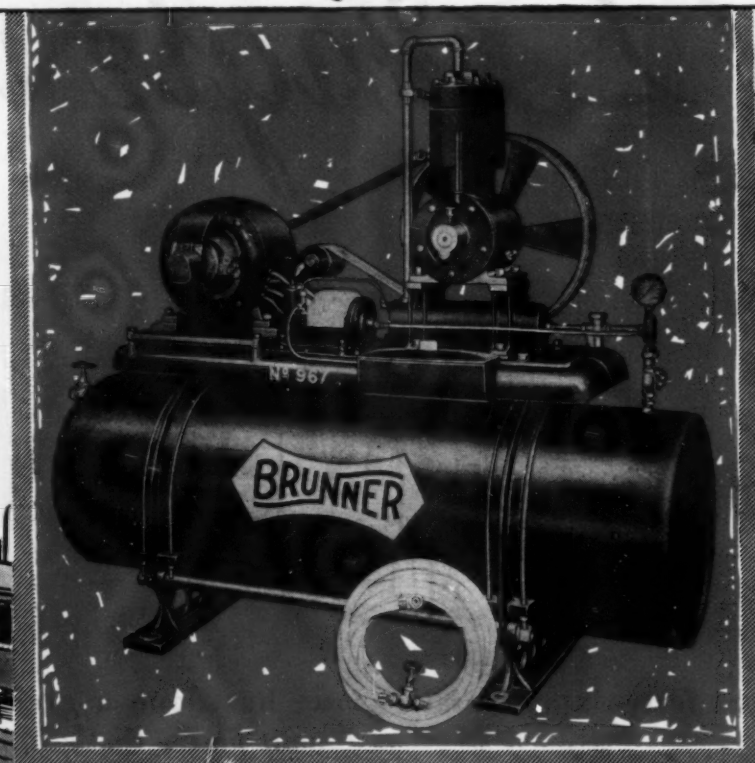
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receivers are noted for their tonal quality, beauty  
of appearance and simplicity of operation. Wide  
range of selection is had in 5, 6 and 7-tube receivers,  
two-cone type reproducers and a range of power units.

# Try this on your Used Cars



## Brunner Model 967

**I**F you have a line-up of used cars that's beginning to get on your nerves, here's a profitable way to move them:

Spray paint them and mark the price up \$40.00 or \$50.00. It's been tried and proven. If a car is priced too cheap and *looks* cheap, nobody wants it. But give it a fair price and a good appearance and it's bound to sell. Many dealers have found this not only the most effective way of unloading used cars, but have built up a profitable paint shop business as well.

The model 967 unit will furnish dependable air service for your paint spray guns in addition to inflating tires and operating valve grinders and engine cleaners.

An instructive booklet "Spray Painting the Automobile", has been prepared. It is full of profit pointers and shows complete Brunner equipment. Send for it.

**BRUNNER MANUFACTURING CO.**  
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**The New Brunner  
Model 300 Spray  
Paint Gun**



BRUNNER MFG. CO.  
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Gentlemen:      Dept. M. A.  
Please send me the Brunner Catalogue and Paint Spray Folder.  
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# A single week



"One hundred forty-six appraisals in one week—"

"more than two hundred demonstrations"

"resulting in twenty-eight immediate sales and more about to be closed"

"signed three new dealers; still considering more applications"

"and our salesroom continuously crowded with real prospects"

That is the result of a single week in Detroit with the little Marmon 8, as reported by A. M. Colville of the Marmon Detroit Company.

Doesn't such a Marmon success in Detroit, of all cities, indicate the nation-wide scope and value of Marmon's latest move?

As Mr. Colville sums it up, "Mar-

mon has done a *great* thing—and done it *first*,—that's important.

"You'd understand how great it is if you could be here in this city of automobiles, and see and feel the constant and daily demand for this brand new kind of automobile."

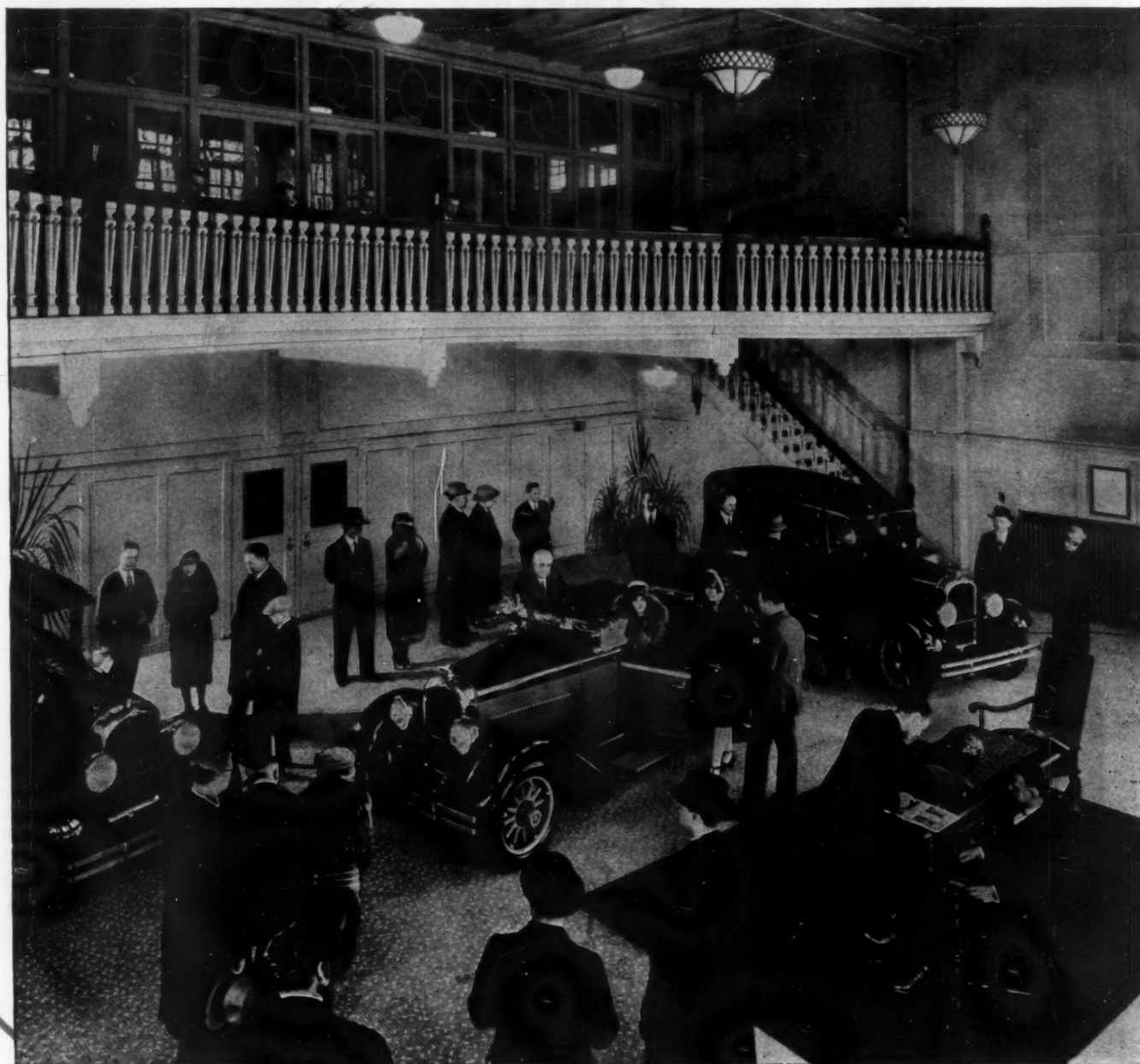
And really isn't it quite apparent that Marmon has been the first to grasp the key of the whole trend and new direction of an industry?

Cold sales facts prove that is so.

Those are the very sound and logical reasons that the Marmon dealer and distributive organization has doubled within the past few months,—and that able dealers everywhere are inquiring into the Marmon franchise.

MARMON MOTOR CAR COMPANY  
INDIANAPOLIS, INDIANA

# *in* DETROIT



(COMPANION TO THE LARGE MARMON SERIES 75)

— The regular run of things for Marmon dealers—as seen in the salesroom of the Marmon Detroit Company—and their figures show that a highly satisfactory per cent. of these prospects turn into actual sales.



Arrow Head's most complete and flexible up-to-date line assures quick service on the 4000 most-called-for fits and applications, including practically "all motors, all years, all models."

## Piston and Pin Headquarters For Motordom

Why so many shops, laboratories, store-rooms, stock keepers, unbalanced and dead stocks, when one thoroughly capable plant can supply better pistons and pins—at lower final cost?

Years ago Arrow Head saw that the motor industry would require someone to specialize in the making of pistons and pins and do that one thing well. Arrow Head accepted the responsibility for these parts that "take the punishment" and supply the transportation.

Every season more motor makers turn to Arrow Head for equipment and replacement pistons and pins. Arrow Head meets the most difficult specifications. Arrow Head's experience includes practically all motors. Arrow Head affords every motor maker mass production economies. Arrow Head can produce even small lots economically. Arrow Head piston-and-pin assemblies simplify production, inspection and fitting processes.

Get better acquainted with what Arrow Head is doing. Our representative will gladly call and discuss the interesting basis on which Arrow Head is becoming piston and pin headquarters for so many motor makers.

Yardstick indicates range of Arrow Head piston diameters from about 12" to less than 2".

ARROW HEAD STEEL PRODUCTS COMPANY  
Buffalo MINNEAPOLIS, MINNESOTA Chicago

# Arrow Head

Pistons • Piston Pins • Axle and Drive Shafts

# Sell improved *motor performance* ....not just a spark plug!



**S**PARK PLUGS should always be sold in terms of *motor performance*.

\* \* \*  
Every time you sell a set of Moto Meter self-adjusting Spark Plugs you *really* sell a new principle of motor ignition: easy starting, smooth running, quick pick-up, more perfect combustion—in fact, *all that* contributes to improved motor performance.

\* \* \*  
With its self-adjusting spark gap, new process insulator and many other distinctive features, the advantages of this remarkable plug are quickly evident to the average motorist. When you have pointed out the new principle involved, you have gone four-fifths the way towards the sale of a set—the only way to sell the utmost in motor performance; it means greater satisfaction to the user, faster turnover with more generous profits to the dealer.

THE MOTO METER COMPANY, Inc., Long Island City, N. Y.  
THE MOTO METER CO. OF CANADA, Ltd., Hamilton, Ontario  
*The name Moto Meter is the registered trade mark and exclusive property of this company.*

**MOTOMETER**  
SELF-ADJUSTING  
**SPARK PLUG**



Spark gap set cold at 15 thousandths of an inch opens to 30 thousandths the instant the engine starts.

These attractive cartons, if displayed, will help sell for you; complete motor satisfaction in convenient form.



**IF IT'S A MOTOMETER PRODUCT IT'S THE LEADER IN ITS LINE**





# ILCO

# \$ 22.50 to

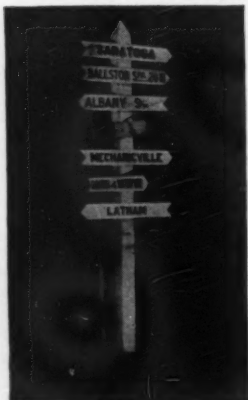


Photo taken across hood of car. Note how brilliantly the road signs are illuminated by Ilco-Ryan-Lites.



Through an exclusive arrangement with Walter D'Arcy Ryan, Director of the Illuminating Engineering Laboratories of the General Electric Company at Schenectady, New York, and the originator of the Ilco-Ryan-Lite, the Indiana Lamp Corporation, Connersville, Indiana, has the exclusive right to manufacture and sell the Ilco-Ryan-Lite in the United States and territories thereof.

**T**HE Ilco-Ryan-Lite is sweeping the country in a wave of popularity that is destined to mark it as the greatest profit opportunity ever offered the trade!

Everywhere, people are talking Ilco-Ryan-Lites, buying Ilco-Ryan-Lites and boosting Ilco-Ryan-Lites. Nineteen outstanding features, including a complete range of models priced from \$22.50 to \$40.00 per pair, offer sales arguments that cannot be overcome.

Ilco-Ryan-Lites completely floodlight the road for a distance of over 225 feet ahead of the car. The arc of illumination is so great that road signs can be easily read while passing. Snow and fog are easily penetrated without back-glare. And the biggest feature of all is this:

***Ilco-Ryan-Lites actually grow dimmer as they are approached! There is no dangerous glare to be faced!***

Mount a pair of these remarkable headlights on your car. Drive behind them. Let them prove themselves. Then you will be ready to *go out and sell!* Develop this new sales field to the fullest extent. Ilco-Ryan-Lites are being nationally advertised. Soon they will be nationally known.

Get the complete Ilco-Ryan-Lite details from your wholesaler. Get new profits now, and keep them coming. ***Remember — the whole country is talking and buying Ilco-Ryan-Lites!***

*Exclusive Manufacturing and Sales Rights for the United States Owned by*

INDIANA LAMP  CORPORATION  
Connersville Indiana  
Distributed to the Wholesale Trade by  
THE STOVER SIGNAL ENGINEERING CO.  
Racine, Wisconsin

## "The Headlight that

# RYAN-LITE

**\$40<sup>00</sup>** *per pair*

**The HEADLIGHT that  
motorists are buying**



*Floodlights the Road"*



# Get **YOUR** hand in this Money Bag —



**"PROFIT FROM THE DAILY GRIND"**

# The Trade Is Reordering



|| "CORK SEAL IN TIME  
SAVE A RE-GRIND" ||

## Let Us Tell You Why!

The trade is re-ordering Cork-Sealed Piston Rings because their trade is buying them.

The performance of Cork-Sealed Piston Rings in engines that have been doing badly, is so radical an improvement that the demand is growing by leaps and bounds.

The Spring overhauling season is nearly here. In a few weeks you will have piston ring jobs fairly lined up before you.

Be ready to service them with Cork-Sealed Rings. You'll find the same reaction that comes to other dealers. More piston ring servicing, more satisfaction, more profits.

*Write us for complete sales information.*

**The Cork-Sealed Piston Ring Corporation**  
2332 Michigan Ave., Chicago

Factory: Denver, Colo.

Canadian Distributor: Purser, Bull & Co., Ltd., Toronto, Canada



# Change Spark Plugs After a Winter's Driving



Now is the time to go after spark plug business.

Every dealer can increase his spark plug sales and sell many sets by putting in an AC Window Trim and soliciting customers to buy a new set of spark plugs after a winter's driving.

AC Products, displayed as leaders in the window, will enable dealers not only to increase their sales on AC Products, but on other merchandise as well.

Material for display furnished gratis on request—simply write for an AC Window Trim.

AC Spark Plug Company, FLINT, *Michigan*

AC-SPHINX  
Birmingham  
ENGLAND

Makers of AC Spark Plugs—AC Speedometers—AC Air  
Cleaners—AC Oil Filters—AC Gasoline Strainers

AC-TITAN  
Levallois-Perret  
FRANCE

Over 200 of the world's most successful manufacturers use one or more, or all of these AC Products

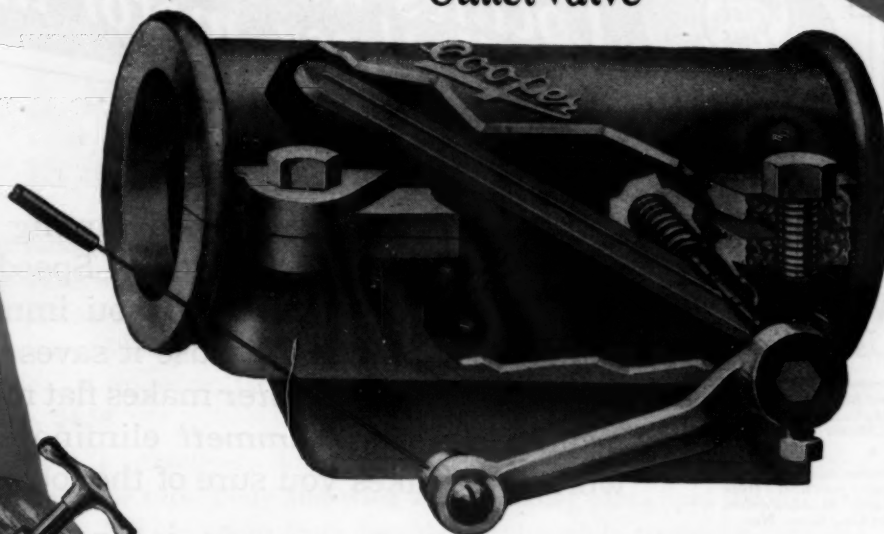
AC AC AC AC  
SPARK PLUGS SPEEDOMETERS AIR CLEANERS OIL FILTERS

# Stock The Cooper

CUT-OUT

Engine Tester  
and Carbon  
Outlet Valve

Wait  
for the  
New 1927 Line  
of *Cooper*  
Car Heaters



List prices range  
from \$2.50 for  
Fords up to \$5.00  
for larger cars.

## Steady, Profitable Sales

Year after year COOPER brings a steady, profitable stream of sales to the automotive trade. And this year more than ever before the Cooper valve will be in demand. The reasons are simple. The best product proven by its years of success—an outstanding advertising and dealers help plan—a name that is favorably known by car owners everywhere.

### Why Car Owners Select the Cooper

1. It is the one scientifically designed engine tester.
2. Blows out loosened carbon.
3. Easily and quickly installed.
4. Ruggedly made with extra heavy flapper and spring.
5. Chatterproof. Silent when closed.
6. Increases power of motor.
7. Saves gasoline.
8. Self-cleaning. Mud, water and dust proof.
9. Relieves all motor back pressure.
10. A combination engine tester and carbon outlet valve.

#### The Cooper Senior Dash Control

A wonderful seller, is this Cooper dash control. For Cooper cut-outs and heaters, also radiator shutters, chokes, etc. List price \$2.00. Clamp-on attachment 25c extra.

#### Special Cooper for Chevrolets

Increasing Chevrolet sales means a larger market. List price \$4.00.

### COOPER MANUFACTURING COMPANY

429 South First Avenue, Marshalltown, Iowa

Exclusive Sales Representatives

THE FULTON COMPANY, Milwaukee, Wisc.

ATTENDANCE AT THE A.E.A. DEALER MERCHANDISING MEETINGS—PAYS





### Read What Hammett Users Say:

We have found the Hammett Motor Tester satisfactory whenever we have used it. R. E. Northway, Works Mgr., Maxim Motor Company, Middleboro, Mass.

Mr. Lang our shop foreman, advises us that the Hammett Motor Tester purchased from you is entirely satisfactory. H. M. Parish, Secy. Durham Chevrolet Co., Reno, Nev.

We have used the Hammett Motor Tester . . . it has been very satisfactory to date. G. G. Hash, H. O. Bell Co., Missoula, Mon.

The Tester is a very handy tool . . . saves a lot of time locating motor trouble, speeds up work, and saves time for the customer. Glad to recommend it to anyone. Welty-Buick Co., Wheeling, W. Va.

The Hammett Motor Tester is everything you claim for it and is sure the biggest labor saver we have . . . it surely takes the guess out of repairing. A. S. Johnson, A. S. Johnson Motor Co., Streator, Ill.

**S**PEED is the watchword among all progressive Service Shops today. Speed up your repair work 50 per cent and you immediately double your profits! Because it saves time, the *Hammett Motor Tester* makes flat rates more profitable—the *Hammett* eliminates guess work and makes you sure of the job.

More than 5,000 progressive Service Shops nation wide have selected the *Hammett Motor Tester* as an indispensable unit of their modern shop equipment. The *Hammett* not only makes complete tests in 15 minutes but convinces your customer that you know your business. You can't beat the *Hammett Motor Tester* for speed and accuracy. *Hammett* Users everywhere say so!

The Hammett Motor Tester positively tests compression . . . locates piston pin, connecting rod and main bearing knocks . . . leaky valves and rings, one cylinder at a time! By the Hammett method, each part needing repair is instantly located without loss of time in taking down the motor. The *Hammett* is guaranteed to do the work. Order through your jobber.

Dealers price, \$13.50

A-15

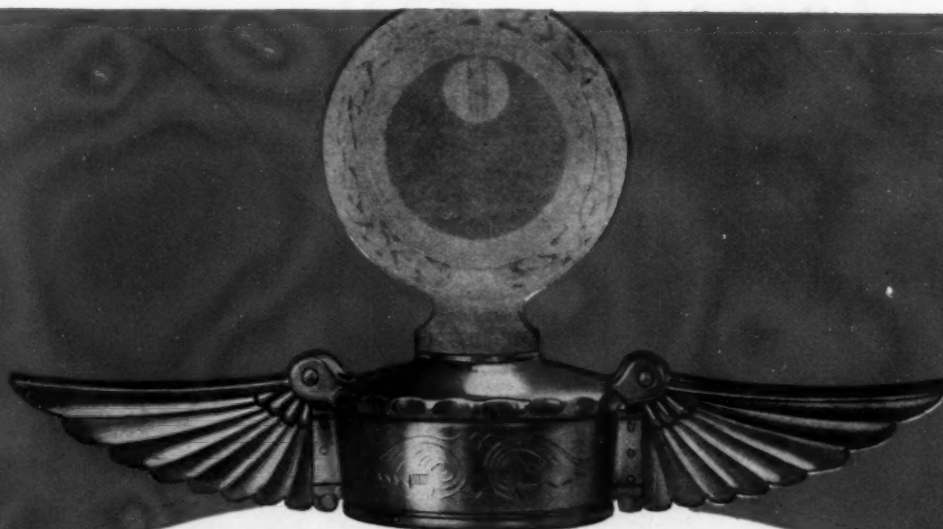
## HAMMETT MOTOR TESTER

Manufactured by

HAMMETT MANUFACTURING CO.

13th and OAK STREETS

KANSAS CITY, MO.



## TILT-WING

a Bethlehem radiator cap that  
is distinctive — and profitable

TILT-WING radiator caps are in keeping with the trend toward finer appointments and better accessories for motor cars. These distinctive caps are easy to sell and make a fine profit for the dealer. List price, large size, \$5.50. Medium size, \$4.50.

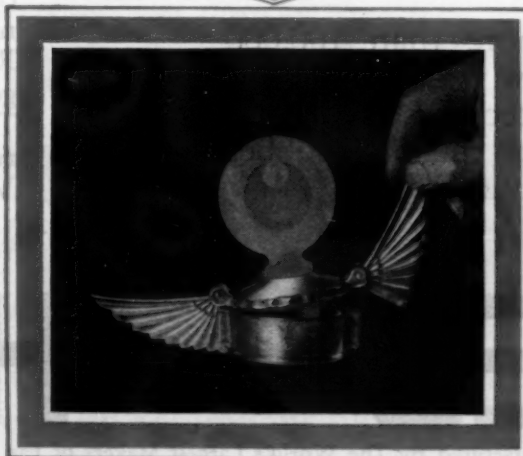
The Tilt-Wing is attractively different from the ordinary radiator cap. Body and wing are of forged bronze. The cap opens from the side for convenient, quick filling and does not interfere with raising the hood. It can be used with or without a motor meter, and both can be

secured to prevent theft. An aluminum sleeve, pressed into the body casting, makes the cap permanently water-tight and steam-proof.

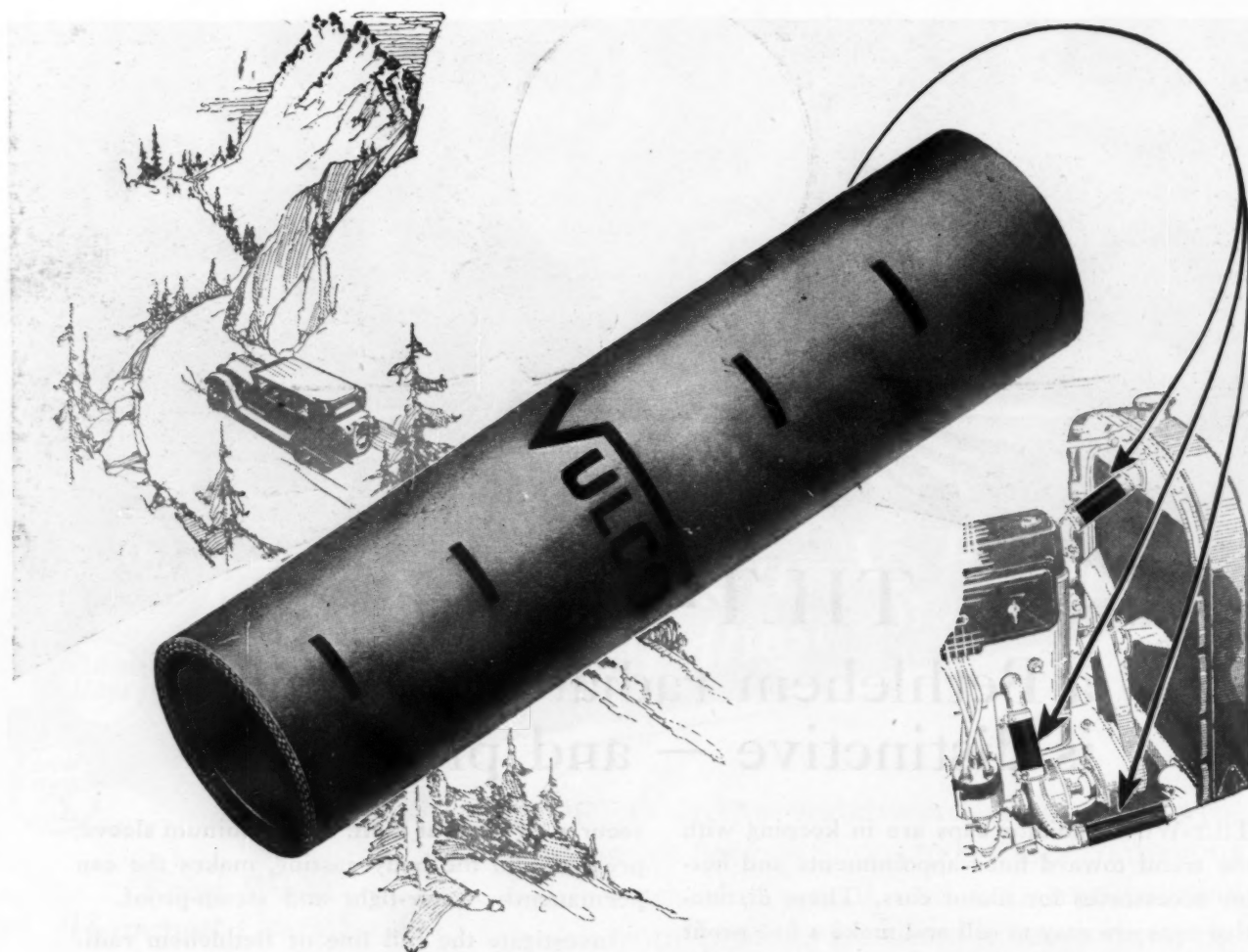
Investigate the full line of Bethlehem radiator caps—Tilt-Wing and De Luxe models for the finer cars—the low-priced, quick-selling Bethlehem Utility and Snappy models for the smaller cars. Sold through regular jobbing and automobile accessory channels. Splitdorf Electrical Company, 392 High Street, Newark, N. J. *Subsidiary of Splitdorf-Bethlehem Electrical Company.*

Reg. U. S.  
Pat. Off.

Established  
1858







## It's the Inside That Gets the Wear

When the inside lining of radiator hose breaks down, the edges curl inward and obstruct water circulation.

That's why more than 100,000 dealers are now protecting their customers by recommending the hose with the tougher rubber lining—the Gates Vulco.



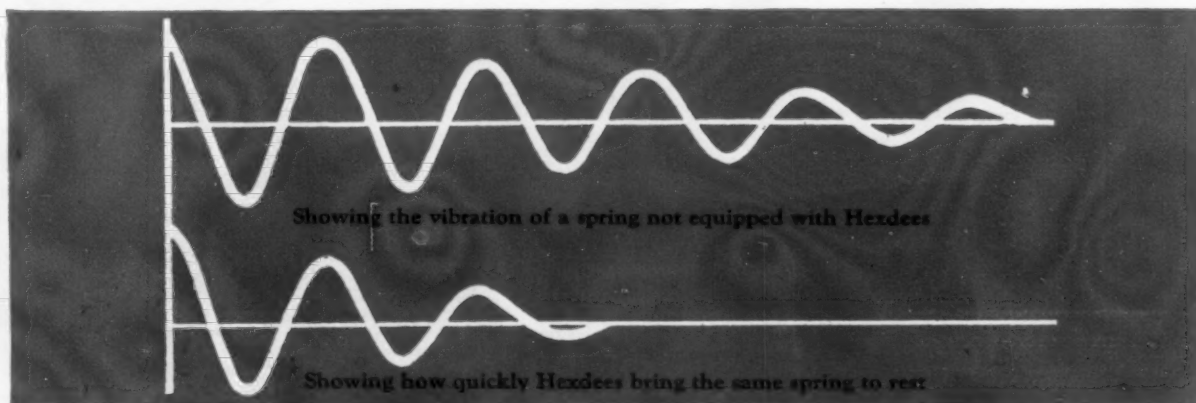
## Your Nail— Tells the Tale

Try to chip the tough rubber lining of Gates Vulco Hose with your thumb nail—then make this same test with any other hose. You will notice quite a difference. Radiator hose, you know gets all its wear inside. That's why the tougher rubber lining of Gates Vulco hose is important.

# GATES VULCO HOSE

Manufactured By The World's Largest Makers of Fan Belts

# HEXDEES "Do the Work" at a *Fraction* of the cost



## Now is the Time to Sell Low Cost Riding Comfort

Spring is here—now is the time to sell Hexdees, when the roads are rougher than usual. Consider carefully these facts:

1. Hundreds of tests, scientifically made, prove that Hexdees give superior results over most shock absorbers selling for two and three times the price.

2. Hexdees, for spring control, are designed and produced by the engineers who have been credited with many of the notable improvements in chassis spring design during the past twenty years.

3. Hexdees are recommended by prominent automotive engineers like H. W. Slausen, New York City; Edward Dixon,

Chicago; Professor L. E. Endsley, University of Pittsburgh; by thousands of motorists and hundreds of car dealers and garage owners.

Hexdees are quickly installed without special tools or fittings, and never wear out. They control the spring within the spring itself.

Try a set on your personal car or demonstrator. The Profit Season is here. Write today.

DETROIT STEEL PRODUCTS CO., 2286 East Grand Blvd., Detroit, Michigan

Pacific Coast Factory: Oakland, Calif.

Canadian Factory: The B. J. Coghlin Co., Ltd., 2050 Ontario St., E., Montreal

\$14<sup>25</sup>

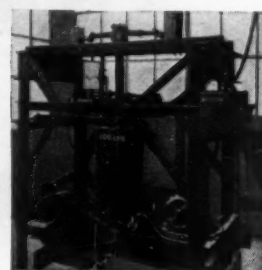
for Complete Set



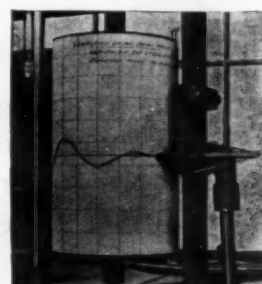
\$8<sup>75</sup>

Complete Set for Fords

\$15.25 and \$9.25, respectively, Denver and West.



The spring-vibrating machine with a spring controlled by Hexdees mounted on top. An 800-pound weight is raised by a cam and released suddenly—perfectly duplicating the spring action on a car passing over rough roads.



The "Chronograph" accurately and automatically records the movement of the spring.

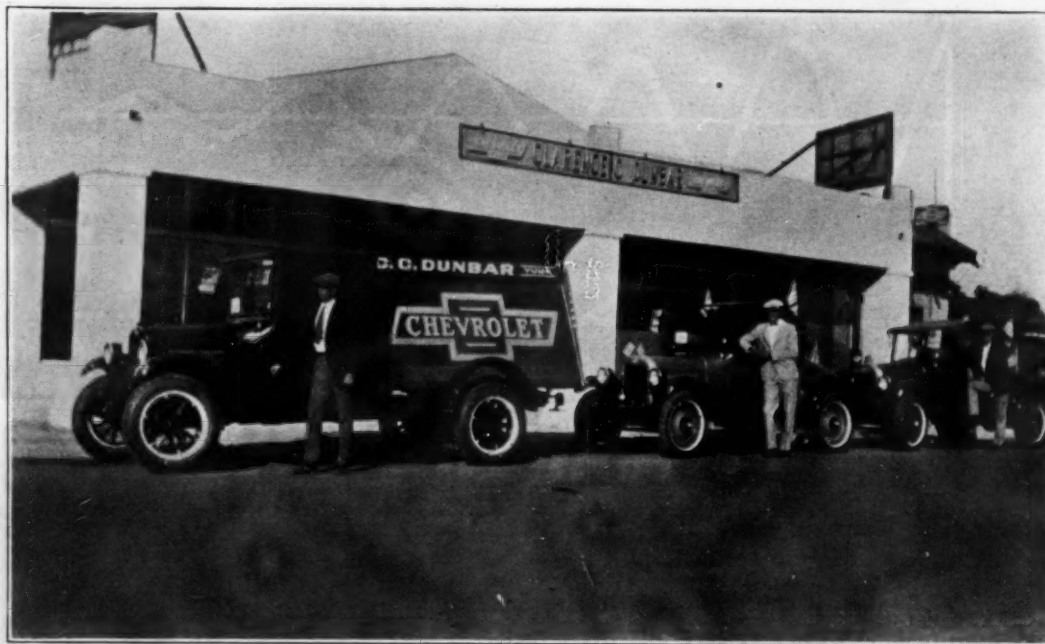
## The NEW TYPE LOW COST Shock Absorber

# HEXDEES

Designed for Spring Control by the Manufacturers of "Detroit Springs," which are Standard Equipment on over 40 Cars and Trucks



# "Three Orders for Immediate Installation"



Clarence C. Dunbar, Chevrolet Sales and Service, Yuma, Arizona

Clarence C. Dunbar, Chevrolet Dealer at Yuma, Arizona, writes:—"Your last shipment of Lincoln Shock Absorbers came in today, and while we were installing a new set on one of our New Peacock Chevrolets we took three orders for Lincolns to be installed on the new model cars as soon as they arrive.

We find that Lincolns in the desert are not only life savers to the car but to the parties riding in it. As we have miles of desert sand that we



fight, without them it is almost impossible. They not only make the car ride easy but are a great assistance in bucking the sand dunes and rough mountain roads.

We are all for Lincolns 100%. Signed — Clarence C. Dunbar.

Lincoln Balloon Shock Absorbers are manufactured by the Lincoln Products Company, 2649-59 N. Kil-dare Ave., Chicago, Ill. Our merchandising and advertising plans mean profits to dealers. Write us today for complete information.

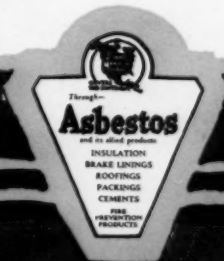
# LINCOLN

## Balloon Shock Absorbers

Isn't  
this  
sense?

# GO TO Asbestos Headquarters *for brake lining*

## JOHNS-MANVILLE





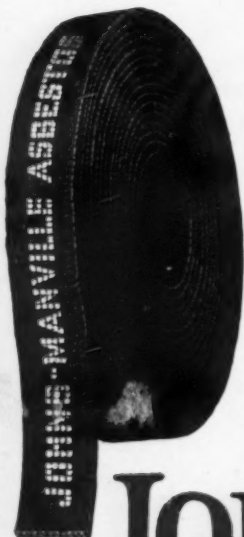
Isn't  
this  
sense?

The safest brake lining you can buy is cheap insurance for the reputation of your shop. ~ ~ ~

The reputation for safety that has been built up around Johns-Manville Asbestos Brake Lining is no unfounded fancy, but a very real thing.

It is backed by many years of making things out of asbestos, and a thorough knowledge of just what sort of asbestos makes the safest and most dependable brake lining. ~ ~

That's what you get in Johns-Manville Asbestos Brake Lining or Brake Blocks.



YOUR  
NAME  
GOES  
HERE

Get this  
sign!

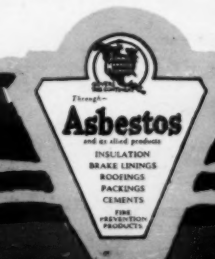
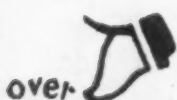
# JOHNS-MANVILLE

CORPORATION

MADISON AVE. AT 41ST ST., NEW YORK. ~ BRANCHES IN ALL LARGE CITIES  
FOR CANADA: CANADIAN JOHNS-MANVILLE CO., LTD., TORONTO

## ASBESTOS BRAKE LINING

CLUTCH FACINGS, PACKINGS, ETC.



**NO GRIEF ~ NO KICKS**

**CLEAR  
PROFIT**

*When you sell*



# **CHANSON Shock Absorbers**

**NO BROKEN STRAPS-NO BROKEN SPRINGS-NO NOISE**

**GRIEFLESS.** This one word tells the whole story about Chanson Shock Absorbers. It tells why jobbers and dealers who have tired of the sickening grief encountered with shock absorbers are turning to Chanson—and making clear profit on every sale because there are no come-backs, no complaints, no after regrets.

Chanson construction has eliminated the grief—such as strap breakage, spring breakage, noise, etc. Equally important, Chanson construction absolutely prevents any pre-loading of car springs, but permits the springs to flex and ride free from harshness over boulevards as well as over rough roads.

## **Advantages of Chanson Construction**

The strap has 21 inches of travel, making it impossible for a strap to break—no car can travel that distance in a rebound.

The Spring is eight feet long, sealed up in a 3-inch case, traveling in graphite grease. Should the strap travel its full 21 inches, the spring action would be so slight it could not be noticed with the naked eye.

The Chanson is not noisy, because we build up our friction on special treated fabric against brass, eliminating rust and noise.

Chanson S. A.'s are packed with three (3) sets of fittings. The dealer uses one set and throws the other two (2) away, thus eliminating a stock of complicated fittings.

Chanson stock consists of two types—the No. 8 which takes care of all makes of cars except the FORD, and the No. 9 which is designed to fit all models of FORD.

The CHANSON ABSORBER is as near being 100% perfect as it is possible to make an Absorber and we invite you to make a test and convince yourself of these features.

Packing of parts to cover ninety-five percent of pleasure cars and one set of four to be used on all cars but Fords ends the jobber and dealer trouble at once. No overstock of extra parts to be inventoried year after year.

*Ask your Jobber's salesman or mail the  
coupon for prices, discounts and full  
information*

**Illinois Iron & Bolt Co. (Chanson Devices Division)**

Est. 1864

**Dept. 418**

**Carpentersville, Ill.**

MAKERS OF CHANSON UNIVERSAL CAR HEATERS

Mail This Coupon

**Illinois Iron & Bolt Co., Chanson Devices Division**  
Dept. 418 Carpentersville, Ill.

Please send complete information, prices and discounts on  
Chanson Shock Absorbers.

Name .....

Address .....

City ..... State .....

Jobber's Name .....



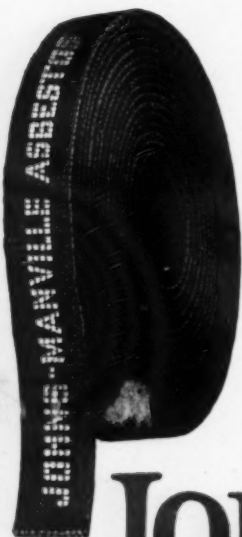
Isn't  
this  
sense?

The safest brake lining you can  
buy is cheap insurance for the  
reputation of your shop. ~ ~ ~

The reputation for safety that has  
been built up around Johns-Manville  
Asbestos Brake Lining is no un-  
founded fancy, but a very real thing.

It is backed by many years of  
making things out of asbestos,  
and a thorough knowledge of  
just what sort of asbestos  
makes the safest and most  
dependable brake lining. ~ ~

That's what you get in Johns-Manville  
Asbestos Brake Lining or Brake Blocks.



YOUR  
NAME  
GOES  
HERE

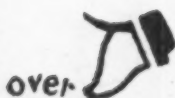
Get this  
sign!

# JOHNS-MANVILLE

CORPORATION

MADISON AVE. AT 41ST ST., NEW YORK. ~ BRANCHES IN ALL LARGE CITIES  
FOR CANADA: CANADIAN JOHNS-MANVILLE CO., LTD., TORONTO

**ASBESTOS BRAKE LINING**  
CLUTCH FACINGS, PACKINGS, ETC.



**NO GRIEF ~ NO KICKS**

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MAKERS OF CHANSON UNIVERSAL CAR HEATERS

Mail This Coupon

**Illinois Iron & Bolt Co., Chanson Devices Division**  
Dept. 418 Carpentersville, Ill.

Please send complete information, prices and discounts on Chanson Shock Absorbers.

Name .....

Address .....

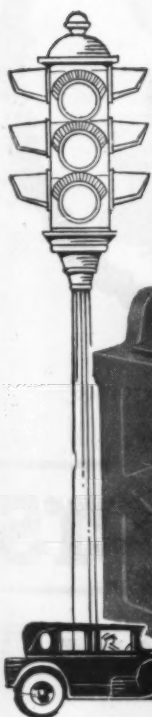
City ..... State .....

Jobber's Name .....



# VESTA

ISOLATOR PATENT



*The Battery That Is Attracting  
Nation-Wide Attention Because  
of This Patented Isolator Feature—*

**What Every  
Battery Needs—  
and ONLY  
VESTA Has!**

**—THE  
ISOLATOR**

Vesta Dealers prize the Vesta Franchise because it places them in a class beyond competition. No other battery has these *Isolators*. It is a feature that places the Vesta Isolator Battery in a Quality class all by itself.

You can readily see what it means to be able to tell a customer that here is a battery with longer life—a battery that has the plates locked firmly in place an equal distance apart—which minimizes plate buckling and consequent short-circuiting—(fully 75 per cent of battery trouble).

Write for our literature fully explaining the *Isolator* principle. It will show you the way to greater profits and increased business. Use the coupon below—or communicate with the Vesta Central near you. There are now 63 in the United States.



## VESTA BATTERY CORPORATION

*2100 Indiana Ave., Chicago, U.S.A.*

-----WRITE NAME ON THIS COUPON-----

Vesta Battery Corporation, 2100 Indiana Ave., Chicago, U. S. A.

MA—4-7-27

Please have the Vesta Central Distributor near me submit the Vesta Dealer Plan and the new battery prices.

**Did you know that**

**Every hour** of the working day at least 1000 car owners are having new fenders put on their cars!

**99 out of 100** accidents result in damaged fenders and that 4 out of 5 mean NEW fenders!

**Dollars** instead of cents is the way you figure profits on new fenders.

**Everywhere** garages and service stations are getting immediate service from Fostoria's nation-wide distributing system.



# It's always the Fender!

*and there are 80,000,000 of them on the roads—*

In every traffic jam, on every bridge, on every ferry, at every parking space it is the same story,—damaged fenders. The most conspicuous part of the car, once it is damaged it is an eyesore to the owner until it is repaired or replaced — and few crumpled fenders can be repaired satisfactorily. Throw away the hammer and paint pot. Send for the Fostoria Wall Chart. It lists all the fenders supplied by Fostoria and the name of the Fostoria distributor in your vicinity. No more waiting for deliveries. Fine, sure-fitting, perfectly finished fenders. A good clean profit. Satisfied customers.

Write today. The Wall Chart is FREE.

*We have an exceptional proposition for distributors in open territory.*

**THE FOSTORIA PRESSED STEEL COMPANY**

FOSTORIA

Dept. A-4

OHIO

**This Wall Chart is FREE**

**Write for your copy NOW**

## REPLACE DAMAGED FENDERS With FOSTORIA Quality FENDERS

Ample Stocks of Replacement Fenders for Immediate Delivery	
<b>BUICK</b>  1926 Buick Sedan \$12.50 1926 Buick Coupe \$13.50 1926 Buick Roadster \$14.50	<b>BUICK</b>  1926 Buick Sedan \$12.50 1926 Buick Coupe \$13.50 1926 Buick Roadster \$14.50
<b>HUPMOBILE</b>  1926 Hupmobile Sedan \$11.50 1926 Hupmobile Coupe \$12.50 1926 Hupmobile Roadster \$13.50	<b>STUDEBAKER</b>  1926 Studebaker Sedan \$10.50 1926 Studebaker Coupe \$11.50 1926 Studebaker Roadster \$12.50
<b>CHANDLER</b>  1926 Chandler Sedan \$9.50 1926 Chandler Coupe \$10.50 1926 Chandler Roadster \$11.50	<b>JAWITT</b>  1926 Jawitt Sedan \$8.50 1926 Jawitt Coupe \$9.50 1926 Jawitt Roadster \$10.50
<b>JORDAN</b>  1926 Jordan Sedan \$7.50 1926 Jordan Coupe \$8.50 1926 Jordan Roadster \$9.50	<b>CHEVROLET</b>  1926 Chevrolet Sedan \$6.50 1926 Chevrolet Coupe \$7.50 1926 Chevrolet Roadster \$8.50
<b>MOON</b>  1926 Moon Sedan \$5.50 1926 Moon Coupe \$6.50 1926 Moon Roadster \$7.50	<b>OLDSMOBILE</b>  1926 Oldsmobile Sedan \$4.50 1926 Oldsmobile Coupe \$5.50 1926 Oldsmobile Roadster \$6.50
<b>WHITE TRUCK</b>  1926 White Truck \$3.50	<b>DODGE</b>  1926 Dodge Sedan \$3.50

The Fostoria Pressed Steel Co.

Dept. A-4, Fostoria, Ohio

Please send me a copy of the Fostoria Wall Chart showing name of nearest Fostoria Distributor.

Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_

# FOSTORIA FENDERS



## There are Three Reasons For Buying a Cylinder Hone

- 1-More Profit to You
- 2-Better Service to Your Trade
- 3-A Better Job at Less Cost to the Owner

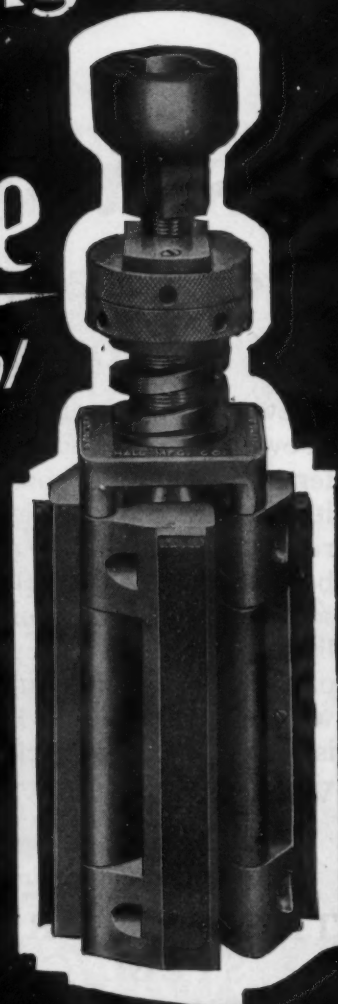
## There are 5 Reasons for Buying a Hall Cylinder Hone

- 1-Combines Spring Tension and Solid Set in One Tool*
- 2-More Speed with Greater Accuracy*
- 3-Wider Range at Less Investment*
- 4-Absolutely Rigid-Perfectly Parallel*
- 5-Approved by Leading Factories as a Service Tool*

Price **\$35.00** at your Jobber's  
Why Pay More For Less.?

The Hall Mfg. Company  
1610 Woodland Ave.  
Toledo, Ohio

# HALL Cylinder HONE



# Count 'em!

## -how many does your line give you?

**1** One of the widest varieties of body types and color combinations in the industry — 20 models in all, and every one a *style leader*.

**2** A "Six" for the man who wants a "Six"—an "Eight" for the man who wants an "Eight". Four chassis in all—three "Sixes" and one "Eight".

**3** A car for every worthwhile purse. Paige factory prices range from \$1095 to \$2795. You can satisfy not only every buyer's preference, but every buyer's pocketbook, as well.

**4** A reputation for *beauty, smartness, and style* that makes Paige cars appeal with peculiar force at the present time. Long known as "the most beautiful car in America", Paige now has the added distinction of being the *style leader* of the industry.

**5** One of the fairest, most liberal, and most convenient time payment plans in the industry. A plan that covers also financial assistance for cars on your floor, cars sold at retail—both new and used.

**6** An association with one of the largest, strongest, and most success-



ful motor car companies. Paige, and Paige dealers have been successful for 18 years. Paige has never been reorganized or refinanced. An association with a stable company—one that has been guided by the same directing heads practically from the beginning.

**7** A continuous and vigorous advertising policy that has built and is maintaining a great and growing prestige for Paige cars throughout America.

**8** Local advertising assistance through the dealer's own newspapers—and

through outdoor posters in his community—is arranged according to a method of dividing the cost that is as liberal as any in the industry. An ample supply of literature is provided dealers gratis.

**9** Paige does not regard the dealer's business as its own—nor attempt to run it for him. The factory policy is fair and square—cars when you want them, but no loading, or "passing the buck".

**10** Absolutely fair and honorable treatment at all times on car allotments—on price changes—and on service adjustments.

**11** A course in selling automobiles is offered to any Paige dealer or salesman—regular prize contests are staged to encourage salesmen—Paige assists in numerous ways, not only to *get* prospects, but to *close* them.

**12** Paige provides its dealers with a simplified bookkeeping and accounting system—it gives its dealers free income tax advice, and a systematizing service.

## PAIGE gives you ALL! Why not get 'em all?

You can verify every statement in this advertisement by personally talking with a Paige dealer. Why not get *all the facts*—and get them *straight*—before being too certain that you are making all the money you can possibly make selling automobiles. Your request for further information places you under no obligation whatever—mail the attached coupon while the matter is on your mind.

PAIGE-DETROIT MOTOR CAR CO.  
Detroit, Michigan

Gentlemen:—

Without obligation, you may send me information about the Paige franchise.

Name \_\_\_\_\_

Address \_\_\_\_\_

(891)



# Fine Grey Iron Head



*Ask Any Engineer*  
A cast head valve, made as Toledo Valves are made, is infinitely superior to any one-piece valve made of the ordinary steels.

The fine-grained grey iron used for the heads of Toledo Valves should not in any way be confused with the ordinary grey irons made by combining large amounts of scrap and a small percentage of virgin pig. The metal used in Toledo Valves has been especially developed for Toledo Valve heads and includes materials in the correct proportions to insure a head that will withstand heat and retain its maximum strength. Leading jobbers everywhere have Toledo Valves for all cars and motors.

**THE TOLEDO STEEL  
PRODUCTS COMPANY**

Toledo, Ohio

*Valves Exclusively for Over Thirteen Years*

**Use  
TOLEDO VALVES**

**VIBRATIONLESS  
DRIVING -  
COSTS ONLY  
\$3.00**

and it's worth every cent of it, to have your Ford go zipping along smooth or rough country roads, with more power, no danger of broken crankcase arms, practically no vibration, squeaks or rattles. That's what the Pioneer Engine Support does for your car. Also sets broken crankcase arms, permanently.

Use as a brace for three or four speed auxiliary transmissions.

**THE BREWER-TITCHENER CORP.**  
109 Port Watson St., Cortland, N. Y.

Patented Dec. 30, 1919

**Pioneer  
Engine Support**  
TRADE MARK REG. U. S. PATENT OFFICE

**TIGHTENS FORD  
CHASSIS**

**Reaching  
the 60%**

The advertisement above, appeared in the March issues of Country Gentleman and other rural publications having a total of over 3,000,000 circulation.

Every month, Pioneer Engine Support advertising reaches this vast population that owns 60% of all Ford cars.

There's a big market for Pioneer Engine Supports, right in your locality. An attractive window display will "pep up" sales on this popular Ford necessity.

Our dealer proposition is an attractive one that will net good profits. Are you on our list?

**The Brewer-Titchener Corporation**  
108 Port Watson St., Cortland, N. Y.

*Also manufacturers of Pioneer Take-Ups for Ford, Star, Chevrolet and Overland cars and Pioneer Replacement Windows for Fords.*

Copyright 1927 by The Brewer-Titchener Corp.

# The Spring puts magic into "YANKEE" No. 130-A



**JUST PUSH!** The spring in handle and "Yankee" Spiral do the work for you—and save your time.

Without loss of a second, the spring brings handle back ready for the next push. And the tension keeps blade in screw-slot, leaving one hand free to hold work.

One handed, you can quickly drive (or draw) screws in the most difficult places with this "Yankee" Quick-Return Spiral Ratchet Screw-driver No. 130-A.

Right-hand Ratchet, Left-hand Ratchet and Rigid. Three sizes of bits.

**No. 130-A.** Standard size.

**No. 131-A.** Heavy pattern.

**No. 135.** Light pattern.

"Yankee" Spiral Ratchet Screw-drivers, without the Quick-Return feature, No. 30-A, No. 31-A, No. 35.

#### Some other "Yankee" Tools

Brake Lining Cutter Automatic Feed Bench Drills  
Ratchet Breast and Hand Drills Ratchet Tap Wrenches  
Automatic Feed Chain Drills  
Vises, Removable Base

Dealers everywhere

sell "Yankee" tools

Write for FREE "Yankee" Tool Book

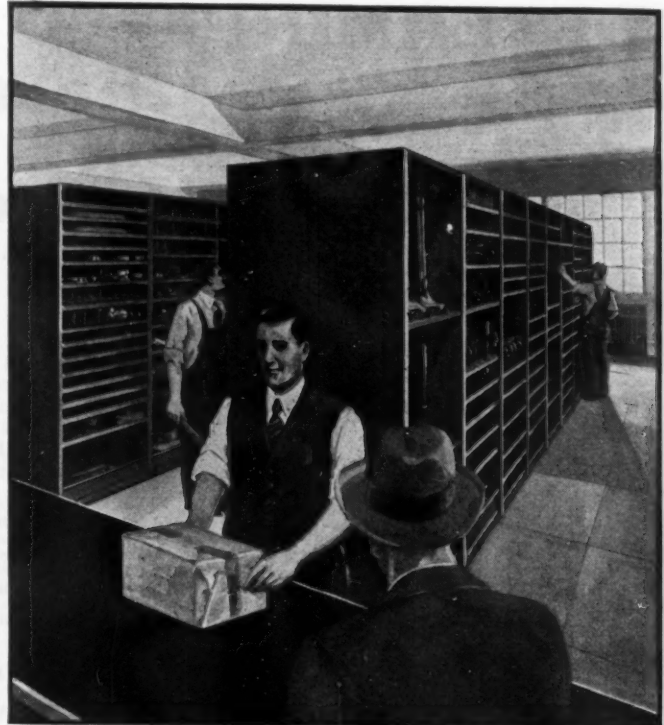
It tells just what you want to know about all the famous "Yankee" Tools for making work easier and quicker.

"Yankee" on the tool you buy, means the utmost in quality, efficiency and durability.

NORTH BROS. MFG. Co., Philadelphia, U. S. A.

## "YANKEE" TOOLS

*Make Better mechanics*



## This Permanent Steel Shelving saves space and costs no more than wood

**THE** space-saving construction of GF Allsteel Shelving increases storage capacity from 10 to 20 percent over old fashioned wood shelving.

GF Allsteel Shelving does not depreciate. Whether you use it in one, or a thousand places, the same rugged strength of GF construction endures. The rigid steel shelves are bolted to a heavy steel framework, never sag, never totter. The baked-on olive enamel never chips or cracks.

There simply isn't any reason for building wooden shelving when you get all these advantages in GF Allsteel Shelving, and the cost is no more. Mail the coupon for booklet "Saving with Shelving."

#### THE GENERAL FIREPROOFING COMPANY

Youngstown, Ohio; Canadian Plant: Toronto, Ont.

Branches and dealers in all principal cities

The GF Allsteel Line: Safes • Filing Cabinets • Sectional Cases • Desks • Tables • Shelving • Transfer Cases • Storage Cabinets • Document Files • Supplies

Inventories are easier with

## GF Allsteel SHELVING

Attach this coupon to your firm letterhead

THE GENERAL FIREPROOFING CO., Youngstown, Ohio

M.A.

Please send me without obligation a copy of your book "Saving with Shelving."

Name .....

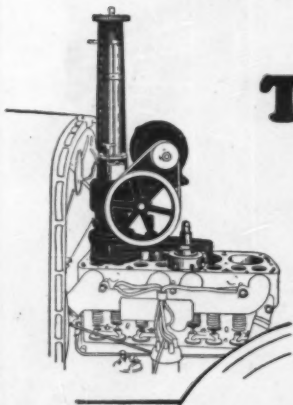
Firm .....

Street No. ....

City..... State.....



# DETERMINE— ADJUST— the cylinder oversize the Storm Cutter Head THE REST IS AUTOMATIC!



Model M, one of four STORM models, can be used on blocks in or out of chassis. Here it is shown on a block in the chassis. STORM simplicity will surprise you—its absolute accuracy make money for you.

**A**LL you need to know is the oversize piston required. All you need to do is to adjust the cutter head to the piston oversize. That's how simple STORMIZING is—the accurate method of reconditioning worn and scored cylinders. The problems of centering the machine, making each cylinder the same size, squaring them with the crank shaft, frequent miking, constant attention and stopping the machine are eliminated automatically. These labor-saving features—and what is more important, the fact that accuracy is not dependent upon the operator—make STORMIZING simple, profitable and accurate.

We have prepared two booklets, one explaining in full detail just how the STORM does what we say in the above paragraph. It also tells how STORM helps you advertise under your own name to build you a bigger, more profitable business. The other, called "FACTS," contains the best charts you ever saw for making your problem of selling motor reconditioning jobs easier. Everything is explained in A-B-C terms, so that you can show any car owner just why and where his motor needs attention. Both books are free. Send for them.

**STORM MANUFACTURING CO. Inc.**

MFRS. OF  
STORM RITEWAY CONNECTING ROD AND PISTON ALIGNER  
STORMIZING EQUIPMENT

406 (A) 6th Ave. So.

STORM HONES

MINNEAPOLIS, MINN.

# STORMIZING

## THE ACCURATE METHOD OF CYLINDER RENEWING

### For Production Painting And Touch-Up, Too

Because of the instant response of Handigrip to varying pulls on the trigger, and perfect atomization regardless of volume, a Handigrip spray gun can be used for either production painting,



touch-up work or patching.

Because of its easy cleaning features, the Handigrip is conveniently used for body lacquers, chassis paints and for different colors, with the same paint cup; or, being easily detachable, extra cups can be furnished for different colors.

The Handigrip is an all-round general utility spray gun.

Furnished with air compressor or for use in connection with your own supply of compressed air.

Our selling policy affords you, without risk, a demonstration of Handigrip efficiency in your own work.

Write for information today.

**Plummer-Huff Company**  
NAPOLEON, OHIO

There's always  
something new just  
at hand for the  
regular reader of

# MOTOR AGE

## A Big Seller with Good Profits



No. 100

Our attractively decorated counter display boxes contain ten hose clamps of ten different sizes ranging from 1 1/4 to 2 3/8 inches in diameter.

**\$4.80**  
per  
Box

Order through your Jobber or direct from us.

**IDEAL CLAMP MFG. CO. Inc.**  
200 Bradford Street, Brooklyn, New York



**Your Customers Can Tell  
AND WILL BUY  
Real YAVAPAI Onyx Gear Shift Balls**

Beauty is the first real reason for the purchase of ornamental gear shift balls—and real Yavapai Onyx is so much more beautiful than any other material that selling on sight is a common occurrence.

Ask your jobber, or get in touch with us, giving his name.

**YAVAPAI ONYX MINING CORP.**  
Automotive Division  
Dyersville, Iowa

## A Dollar and time saver for YOU



## Key Graphite Paste!

"WE recommend Key Graphite Paste for treatment of cylinder-head gaskets, oil pan gaskets, eccentric housing gaskets and at all points where leakage must be prevented," said Hudson Motor Company.

"Furthermore, experiments in our shop prove it insures tight joints. It is a water-mixed compound absolutely unaffected through contact with crank-case oil or gasoline."

## Send for Free Sample

That you may prove the value of having Key Graphite in your shop we will send you a free sample on request. Test it out on your very next job. See what an hour saver it is. Fill in the coupon now.

## Key Boiler Equipment Co.

East St. Louis, Ill.

Key Boiler Equipment Company  
27th and McCasland Ave.  
East St. Louis, Ill.

Send me a free sample of Key Graphite Paste and descriptive leaflet of where and how to use it.

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

MA 4727





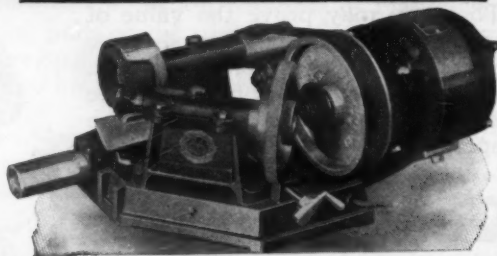
### Replacement Spring Assortments for rush jobs!

**D**ON'T hold up customers because you lack one little spring to finish a repair job. Keep a Peck Spring Assortment on the shelf and be ready for emergencies. Each of the three Peck Assortments has been carefully selected for garage repair work and contains both steel and brass springs in all most used sizes. Two assortments have both extension and compression springs, one has all extension springs.

See how handy these assortments are! Just one spring can save you the price of the whole box. Range from \$1.50 to \$5.00. If your jobber can't supply you, write us direct. The Peck Spring Co., Plainville, Conn.

## PECK'S SPECIAL SPRING ASSORTMENTS

*Pay for this  
Needed Equipment  
as you use it*



### The CROWE CUPPED WHEEL VALVE REFACTOR

No burdensome investment! Easy terms if you want them! The Crowe reclams valves perfectly in 30 seconds. The machine is a time-saver—saves money and time—and pays for itself with a few weeks work. Low cost, \$87.50. Guaranteed!

**yes**

**LISLE MANUFACTURING CO.**

819 East Main Street, Clarinda, Iowa.

Without obligation, send me more information about the Crowe Cupped Wheel Valve Refacer.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

The Lisle Manufacturing Co. also manufactures the new Lisle Reliner (worn brake lining remover, lining cutter, reliner and tire chain mender—all in one). slickest tool you ever saw.

## LIPMAN Spray Mist Car Washer



Cleans car thoroughly—quickly—inside and out, including motor, transmission, etc. Uses straight air on interior and for drying; spray mist—NOT HIGH WATER PRESSURE—on exterior; kerosene spray for grease encrusted parts. Absolutely guaranteed not to injure any car finish. Furnishes air for shop tools, tire service, stripping off old paint and applying new.

Complete details, prices, etc., gladly supplied on request.

**LIPMAN PUMP WORKS**  
2306 Eleventh St., Rockford, Ill.

## FOLLETT'S NEW MODEL TIME STAMP

accounts for every labor minute



Prints the year, month, day, hour, minute, A.M. or P.M. at the exact moment the plunger is pressed—like this, for example:

**NOV 19 1920 4 31 PM**

Tells when a job is started—and when it is finished. There can be no dispute over the time charge.

Learn the interesting details from our descriptive data.

Absolutely automatic—except for winding. Every machine guaranteed.

**Follett Time Recording Co., 217 High Street, Newark, N. J.**

"Established Since 1904"

The most successful  
merchandisers keep  
at it every week . .

in

**MOTOR AGE**

## A.E.S. IGNITION WRENCH KITS



### GOOD PROFITS

MADE BY  
**NIEHOFF**

are made by featuring A. E. S. Ignition Wrench Kits. We have kits for the mechanic and car owner. They are accurately made to fit all ignition systems.

Our fifteen years of manufacturing experience enables us to offer you the highest quality at the lowest price. Write for full descriptive circular.

**C. E. NIEHOFF & COMPANY**  
141-149 W. Ohio Street, Chicago, Illinois



## Our SAMPLE CASE



A quality product which saves the repairman time and trouble.

**VELLUMOID**

THE VELLUMOID REAL  
REPLACEMENT GASKET MATERIAL  
M'd by The Vellumoid Co., Boston, Mass.

### THIS TOOL KIT HELPS TO MOVE THOSE USED CARS



1 Screw Driver, 4" Blade.  
1 Ball Pein Hammer.  
1 6" Pliers.  
1 No. 25 double end wrench.  
1 Punch.  
Complete in draw-string bag.  
No. 156.

Price 75c \$8.40  
dos.

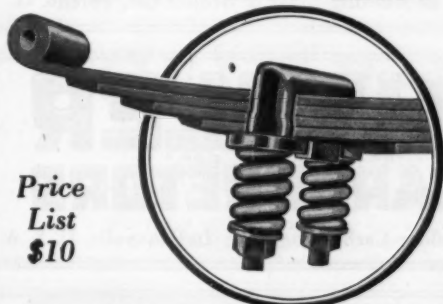
If your jobber can't supply you, write direct.

**CHICAGO TOOL & KIT MFG. CO.**

156 Whiting St.,

Chicago

### ANCHOR BALL BEARING Shock Absorbers



Price  
List  
\$10

Fit Fords  
and 90%  
of all  
other cars

A new principle of shock absorbing, and a better idea. A big seller with liberal discounts for dealers.

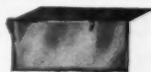
Write for circular and special dealer offer.

**ANCHOR ELECTRIC COMPANY**

557 W. JACKSON BLVD.

CHICAGO

### KILGLARE



Kills those blinding reflections from the car behind

#### WITHOUT EXPENSE OF NEW MIRROR!

75c

Kilglare fits over rearview mirrors and flips up out of the way or down into position by a tap of the finger. Instantly attached—nothing to get out of order. Kills reflected glare from headlights in rear—yet gives proper vision. Within reach of all—sells on sight. Ample sales-helps. Write! N. A. Petry Co., Inc., 340 N. Randolph St., Philadelphia, Pa., or Norman Cowan, Rialto Bldg., San Francisco, Cal.

## Mr. Manufacturer

You are invited to have this Sample Case Salesman present your proposition to the leading Automotive Merchants. This Salesman has effective contact with nearly 25,000 prospects.

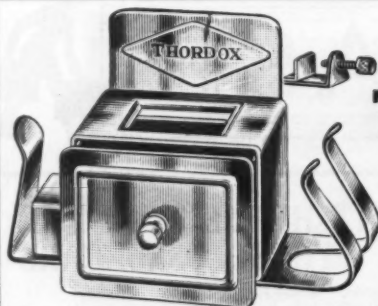
Drop us a line and we will tell you all about this economical plan.

**SAMPLE CASE SALESMAN**

**MOTOR AGE**

5 So. Wabash Ave., Chicago, Ill.



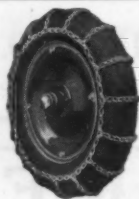


## The THORDOX

Clamp on  
Ash  
Receiver

One of the biggest sellers in a fast-selling class. In addition to ash receptacle, it includes holders for a box of matches and pack of cigarettes. Made of Non-rust THOROLIUM, highly nickel plated. Will not rust or rattle. And the list is only 75c. Write.

**THE THORDOX MANUFACTURING CO.**  
410-412 N. Hermitage Ave. Chicago, Ill.



## April mud means profits for Dreadnaught tire chain Dealers

*The "Ask 'em to Buy" Cabinet  
makes the sales for you*

**THE COLUMBUS McKINNON CHAIN CO.**  
General Sales Office: Columbus, Ohio  
Plants: Columbus, Ohio. Tonawanda, N. Y.  
In Canada: McKinnon Columbus Chain, Ltd., St. Catharines, Ont.

## DREADNAUGHT TIRE CHAINS

FOR BALLOON, CORD AND TRUCK TIRES

## EFFECTIVE AT ONCE!

The Factory and General Offices  
of **THE BURGAN  
CORPORATION**

will be located at SHENENDOAH, IOWA  
Instead of 9 S. Clinton St., Chicago



**THOMSON MFG. CO.**  
Dept. 21 Peoria, Ill.

If jobber does not stock  
write direct

## Genuine APEX Innerings

Guaranteed to stop oil pumping  
and piston slap and renew mo-  
tors without re-boring.

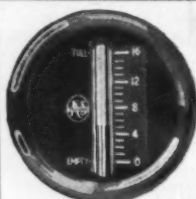


—with the NEW Sioux Roller Chucking System. Amazing accuracy and speed. Investigate before you buy.

**Your Jobber Sells It**

## Valve Face Grinding Machine

**ALBERTSON & CO.**  
SIOUX CITY, IA.



## The K-S GASOLINE Telegage

A gasoline gauge on the Dash. Note our half page advertisement in the Saturday Evening Post, April 16. Write for description and proposition to the trade.

**KING-SEELEY CORPORATION**  
298 Second Street Ann Arbor, Michigan  
Chicago Branch, 2450 Michigan Boulevard

## SIMPLEX Piston Rings

Simplex Piston Rings supersede all other methods of rebuilding cylinders and pistons.

**10,000 MILES GUARANTEED**  
Against Oil Pumping, Piston Slap  
and Compression Loss — Backed up by  
Simplex Distributors in your Community

Send for details of this short cut scientific method of reconditioning ALL cylinders, no matter how worn, tapered, out of round or heat distorted.

**THE SIMPLEX PISTON RING COMPANY**  
of America, Incorporated  
1971 East 66th Street, Cleveland, Ohio



Branches in:  
New York  
Chicago  
Philadelphia  
Boston  
San Francisco

## BUNTING BUSHING BEARINGS

Put Bunting Quality into all  
Replacements

The Bunting Brass & Bronze Co., Toledo, O.

## SCHEBLER

REG. U. S. PAT. OFF.  
The World's Finest **CARBURETORS**

The Wheeler-Schebler Carburetor Co. Indianapolis, U. S. A.

## CONSOL

## RADIO - BATTERIES - ELIMINATORS

**CONSOLIDATED BATTERY CO., INC.**  
New York PHILADELPHIA Buffalo

## NEXT WEEK

—is the time to read next week's issue of MOTOR AGE,  
as you are reading this week's issue this week

## MOTOR AGE

5 So. Wabash Ave.

Chicago, Ill.

Build good will and good business too! They're automatic

Clean filtered air,  
automatically  
weighed. A service  
your customers are  
sure to appreciate.



Manufactured by  
**THE AIR SCALE  
CO.**  
812 Broadway,  
Toledo, O.

ACCURATE

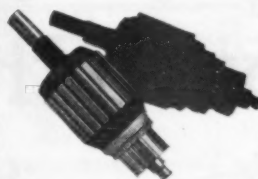
DEPENDABLE

## LYCOMING Motors

Fine Fours, Sixes and Eights-in-Line

LYCOMING MANUFACTURING COMPANY, Williamsport, Pa.

*Years Ahead in Automobile Motor Efficiency*



## FREDERICKS Rewinds

New low prices: Rewinding or exchanging any two unit type of automobile generator or starter armature, \$2.50. Any type of Ford armature \$1.50. Special prices on Ford armatures in quantities.  
H. M. FREDERICKS CO., Lock Haven, Pa.

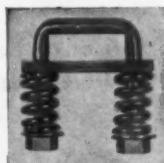
## RADIATOR CAPS



## ORNAMENTS

Confidence in a product that has been produced with scrupulous attention to detail is born only of experience. Our clients know they receive only the finest in material and artistry.

FAITH MFG. CO., Inc. 2533-39 N. Ashland Ave., Chicago, Ill.



## Orrville Spring Governors

Make Smooth-Running Profits

Among the foremost popular sellers for easier riding. Simple in operation and easy to install. Check the rebound and control the springs against "galloping". Ask for illustrated literature and discounts worth while.

ORRVILLE SPRING GOVERNOR CO., INC.  
500 Brant Bldg. Canton, Ohio

Pat. Pending

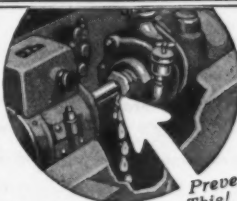
## CELORON

### TIMING GEARS

Silent at all Speeds

### THE CELORON COMPANY

Division of Diamond State Fibre Company  
BRIDGEPORT, PA.



## SPRING IS HERE!

Make a permanent repair on the leaky Water-pump. CONNEAUT PLASTIC METALLIC PACKING does the job even on the worn shaft.

All sizes in one can. Stocked at your jobbers.  
1 lb. can \$1.75 per lb.  
5 lb. can \$1.60 per lb.

Manufactured by

THE CONNEAUT PACKING CO. Ohio

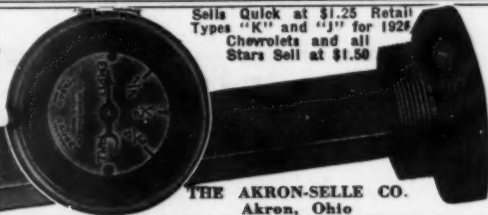
Prevent  
This!



Let us  
send our  
profit-  
boosting  
plan.  
Its Free.

## TASCO

Gas Gauge for  
FORD  
CHEVROLET  
OVERLAND  
and STAR



Sells Quik at \$1.25 Retail  
Types "K" and "J" for 1925  
Chevrolets and all  
Stars Sell at \$1.50

THE AKRON-SELLE CO.  
Akron, Ohio

## Two New Features



## FAWSCO SOCKET WRENCHES

Catalog 121 Shows

FAWSCO WRENCH CO., 27 Warren St., New York City

## SOLID TRUCK TIRE SALES

PROMOTION IS STIMULATED BY SERVICE

Our Full Page Message in Chilton's Catalog and Directory (The Yellow Book), tells the Service Tale of the Giant Tire Applying Press.

The Charles F. Elmes Engineering Works

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CHICAGO, ILL., U. S. A.

WIRE OR WRITE US FOR NEW OR USED

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IF IT'S FOR AN AUTOMOBILE WE HAVE IT!

SEE OUR NEXT DISPLAY IN MOTOR AGE APRIL 28

STATE AUTO PARTS CORPORATION

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The Jordan is different  
— and always will be.



Jordan Motor Car Company, Inc.  
Cleveland, Ohio

**U** Replacement Generator Field Coils  
Quit retaping oil-soaked coils. Use U. S. Replacement Coils, and get the business. Uniform in price: for Fords \$1.50; others \$3.00.  
Liberal Discounts to Dealers and Jobbers.  
**S** GUARANTEED ARMATURE SERVICE  
Immediate replacements from our stock of 8,000 ready to ship.  
Inquire about our complete service.  
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Division U. S. Auto Supply Co.  
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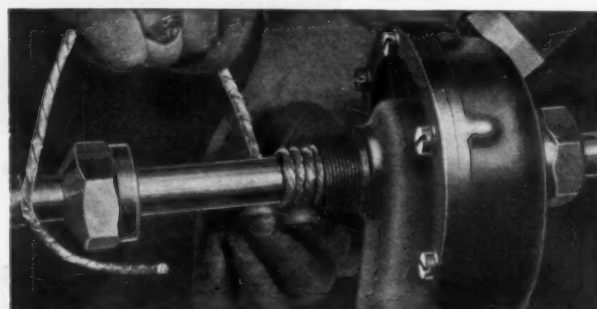


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# John Crane

## Auto Pump Packing Metallic



### The Pump Packing the Motor Builders Use

"John Crane" is standard equipment on over 40% of all cars. Prevents scored and leaky rods. Absorbs rod friction and vibration. Saves non-freezing mixtures.



### Now Available for Replacement — One Size for All Pumps

Compresses as shown into a one piece packer. Gives long service. Makes a repacking job worth more money.

### Crane Packing Company

1805 Cuyler Avenue,  
Chicago

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New York

Gentlemen:

Send \_\_\_\_\_ spools 40 ft., 3/4 in. of "John Crane" Style 112 Replacement Pump Packing. Net each \$2.50 f. o. b. factory.

Name \_\_\_\_\_

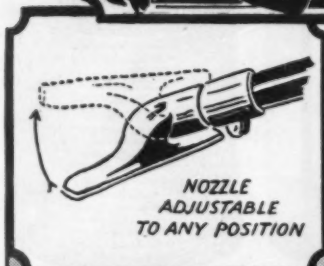
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## Now offer a real cleaning service with *Port-o-Vac*



NOZZLE  
ADJUSTABLE  
TO ANY POSITION

**I**NCREASE your profits thru improved service.

Keep your customers' cars clean inside as well as outside. It's easy when you have a Port-o-Vac. Just plug it in the nearest socket and it's ready. Light—easy to carry—yet has a full size  $\frac{1}{8}$  H. P. General Electric motor—gives the same suction as a large Household machine.

Port-o-Vac is designed especially for cleaning the interior of automobiles. Its adjustable nozzle will reach all of the little nooks and crevices—suck out all the imbedded dirt—leave the upholstery and carpet clean as a parlor floor.

The nozzle is completely universal. It may be turned upside down or sideways, making it easy to clean the top, while the telescoping tube can be lengthened or shortened to suit.

In addition, the tube can be detached and a flexible rubber hose with special fittings and vacuum brush, attached in its place. Use it on every car before it is turned over to the owner.

Every car dealer, filling station and garage needs a Port-o-Vac. It saves cleaning time and cleans better—renders a service that will appeal to your customers—develops a reputation for your establishment, and a greater patronage and satisfaction. *That Means Profit.*

# Johnson

MOTOR PRODUCTS CO.  
308 NORTH SHELDON ST. CHICAGO



for Economical Transportation



# Volume Production *makes possible* Greatly Improved Quality at amazing Low Prices !

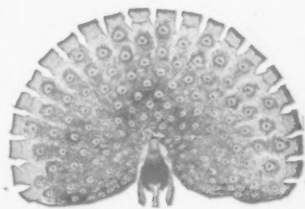
**January 1925** —There was introduced a new Chevrolet which scored a tremendous success. Among its many new features were a new and rugged rear axle, an improved unit power plant, a new single-plate disc-clutch, a much stronger frame, semi-elliptic chrome vanadium steel springs, cowl and dash lamps, and new Fisher bodies finished in Duco. The price of the Coach was . . . **The COACH \$735** f.o.b. Flint, Mich.

**August 1925** —Chevrolet announced a new measure of value based on many new quality features such as a motor-driven Klaxon horn, improved sheet metal construction in the bodies, corrugated steering wheel with walnut finish, new headlamp rim construction and a more convenient gearshift lever. Yet, despite all these additions, the price of the Coach was reduced to . . . **The COACH \$695** f.o.b. Flint, Mich.

**January 1926** —Saw another spectacular increase in Chevrolet value—a model offering many mechanical improvements such as a smoother, quieter motor with three-point suspension, silent V-belt generator drive, new oil pump, more efficient cooling, an air cleaner, 33½% larger brakes and other refinements. Nevertheless the Coach price was again reduced to . . . **The COACH \$645** f.o.b. Flint, Mich.

**January 1927** The new Chevrolet came to the public at an amazing price reduction—yet it provides many new and important quality features.

The new Fisher bodies are paneled and beaded, rakishly low, finished in modish shades of Duco—and enhanced by full crown, one-piece fenders, bullet-type lamps and “fish-tail” rear deck modeling. Many mechanical improvements—such as AC oil filter, AC air cleaner and full 17" steering wheel—give finer performance and longer life. . . . **The COACH \$595** f. o. b. Flint, Mich.



*The Most*  
**Beautiful Chevrolet**  
*in Chevrolet History*

The Touring or Roadster **\$525**  
The Coach . . . **\$595**  
The Coupe . . . **\$625**  
The Sedan . . . **\$695**  
The Sport Cabriolet . . **\$715**  
The Landau . . . **\$745**  
1-Ton Truck (Chassis only) **\$495**  
½-Ton Truck (Chassis only) **\$395**  
Balloon Tires now standard on all models. All prices f. o. b. Flint, Mich. In addition to these low prices Chevrolet's delivered prices include the lowest handling and financing charges available.



The outstanding success of the Chevrolet Motor Company, with the nationwide demand for its products, is giving Chevrolet dealers a profit opportunity without parallel—making the Chevrolet franchise one of the most valuable in the entire automotive industry.

CHEVROLET MOTOR CAR COMPANY, DETROIT, MICHIGAN  
Division of General Motors Corporation

Q U A L I T Y   A T   L O W   C O S T



# Motor

A steep, steady curve of growth shows how steadily Motor Wheel has supplied desired wheel betterments. Whatever the trend of production or retail buying habits, the Industry has found Motor Wheel with the right wheels ready—most practical for the assembly line—most effective on the sales floor. ¶ The nice ability of Motor Wheel to “fit in” to any and all requirements has lengthened and lengthened the list of cars equipped by Motor Wheel. The margin of Motor Wheel leadership over all other wheel builders keeps widening at the fastest rate ever.

MOTOR WHEEL CORPORATION, LANSING

# Wheel